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G. Arthur Cooper - Field notes, 1966

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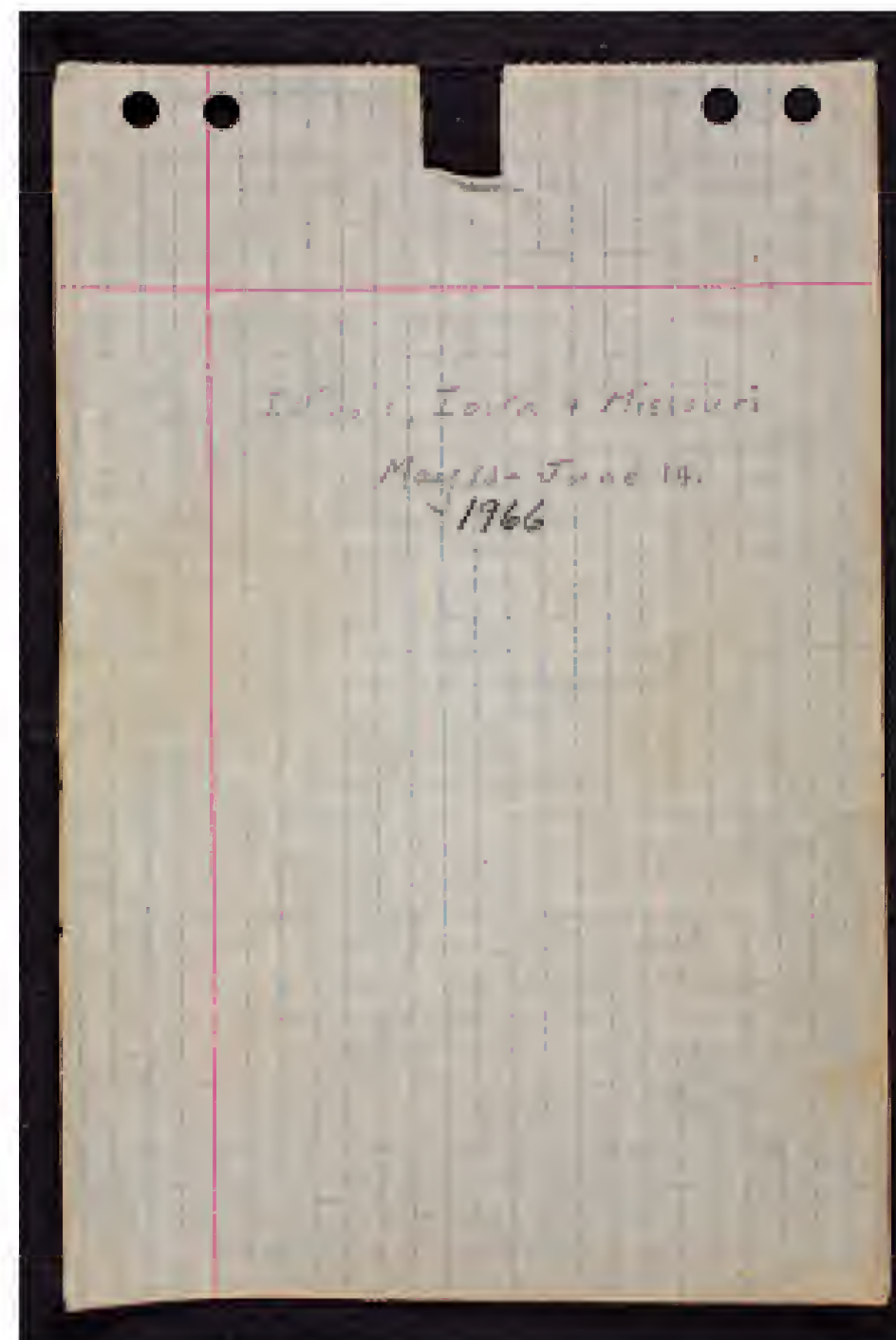
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Illinois, Iowa & Missouri

May 10- June 14.
1966



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[[Numbers read upside down]]

6~~1~~⁰⁰
92
[[underline across numbers]]
518



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1

May 12

Arrived Iowa City about 10 A.M. Talked till noon. After lunch Bill Furnish took us to two collecting places near Iowa City.

329- 661- Palo Qy. on Dry Creek, NW 1/4

31-84N-8W, 1/2 mile W and 1/4 mile S of bridge over creek, Linn County, Iowa.

This is locality for Strobilocystites which occurs 2-4 feet below the Coralville which is exposed in the middle of the quarry. Our collection came from about 3' below the Coralville.

329a 662- Quarry at bend of road, on Rapid R. SE 1/2 SE 1/4 30-80N-5W, 2 miles NE of Iowa City, Newport Tp., Johnson Co., Iowa. Same as previous. Collecting in Pentamerella zone of Rapid member. Corals forming on massive ledge some 8-10' below the Coralville. [[Brachio?]] in shaly beds 4 or 5' below the Coralville.

329b 663- River Products Quarry - about upper 20' of Rapid overlain by Coralville. Collection in Pentamerella beds. The shaly part in lower 1/2 of Rapid. NW 1/4 33; Penn Tp. 80N-6W

329c 663a- Waterlooensis- same quarry

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2

323a- 664- State Qy beds - old quarry now on branch of Reservoir.
Coarse light gray to cream colored calcarenite and shell breccia with
some crinoidal debris. Brachiopods common in lower part. Small Atrypa
most abundant. Saw no Pugnoides SW 1/4 5-80N-6W Newport Tp.

330a- 665- Spillway & dam of MacBride Lake - Mainly Solon probably
near top. SW1/2 29-81N-6W.

Big Grove Tp.

330b- 666- Quarry 3 miles W & about 1 mile S of Paralta SW1/4 6-Linn
Tp. Linn Co., 83N-5W, Iowa

362a- 667 - 0.3 mi W of Middle Amana on St. 220

May 14

344a 668 - Qy NW of Quasqueton with Rensselandia

352- 669- Quarry on US 20, about 0.7 mile E of Jessup S center 33,
Perry Tp., 89N - 10W. 0.7 mile E. Junction Co HY T & US 20. Picture
taken.

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Coarse light gray to cream colored
calcarenite and shell breccia with
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Atrypa most abundant. Saw
no Pugnoides SW1/4 5-80N-6W
Newport Tp.

330a- 665 - Spillway & dam of MacBride
Lake - Mainly Solon probably
near top. SW1/2 29-81N-6W.
Big Grove Tp.

330b- 666 - Quarry 3 miles W & about 1 mile S of
Paralta SW1/4 6-Linn
Tp. Linn Co., 83N-5W, Iowa

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E of Jessup S center 33, Perry Tp.
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May 16

6610 = 325

Quarry on N side Ia 382, at west edge of Solon - Quarry about 10' high but about 50 to 60 yards west of wall on long slope appears breccia and under the breccia brown ggy dolomite marking the base of the Solon. About 6 or 7' of Solon with independensis to base of quarry and 5 1/2 - 6' of same in quarry wall. Gypidula throughout. S. occidentalis throughout. Independensis zone yellowish or buff gray, nodular ls. Shaly beds contain hard knots of limestone often with fossils. Corals rare and scattered. Wapsipinicon present in road ditch. Our fossils are all from the Independensis zone.

Rocks dip to north at low L showing higher beds at that side of the quarry. At top independensis zone comes a layer with small

Cystiphyllum. If the upper beds are profundum zone. There can be only about 4 or 5' of it in the middle of the quarry but the quarry for 20 yds at north end is probably profundum, which is therefore probably 8-10' thick, more massive and less

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4 4
shaly than the independens zone. Quarry is 0.2 mile W of junction of
Hy 1 and 382.

Loc. 6611 = Qy on Ia ^ Luin Co
FF 0.8 mi N of Ely, Ia.
342

Section at S end of Qy

15' D

4 1/2' C

4' B

3' A

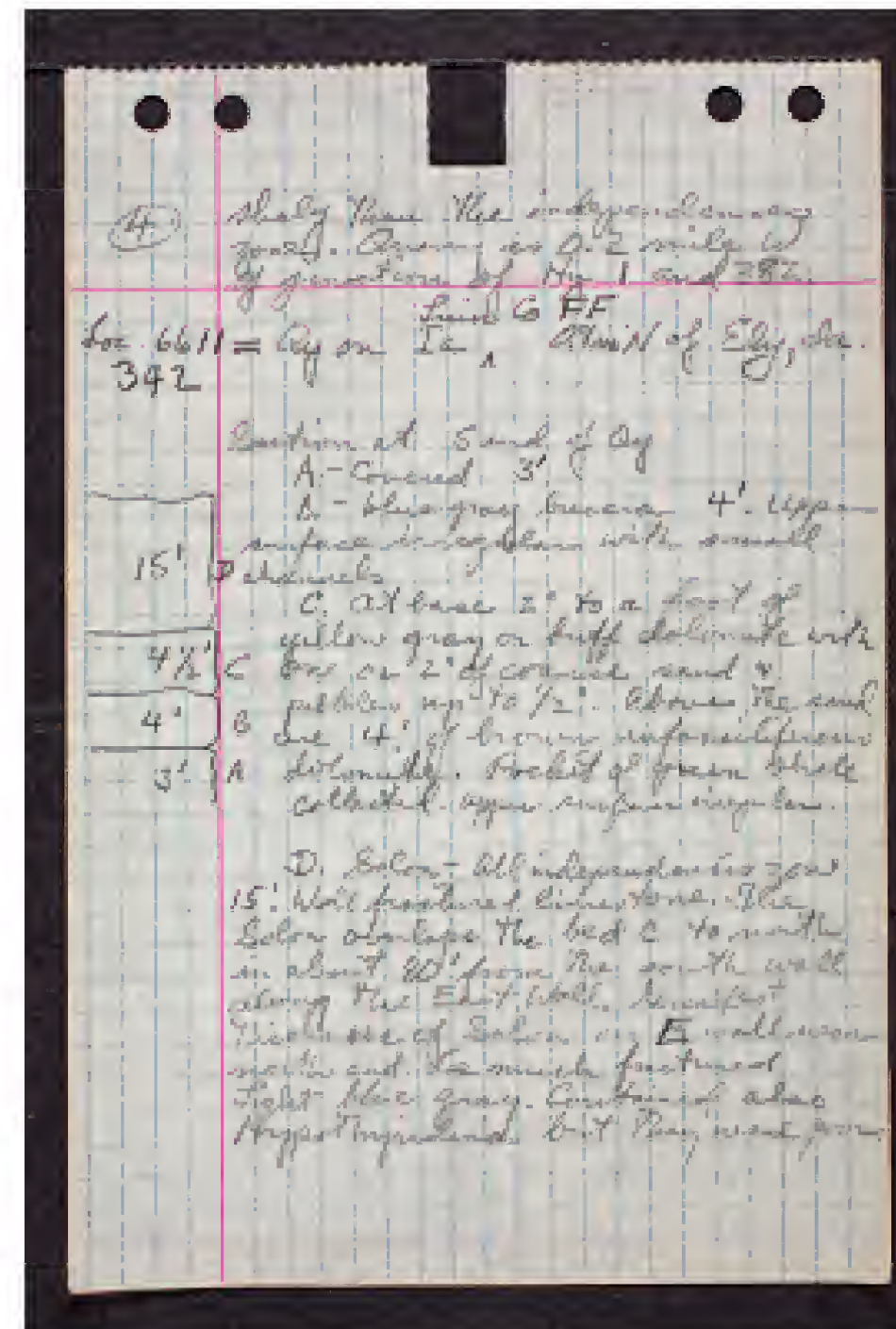
Section at S end of Qy

A. - Covered 3'

B. - blue gray breccia 4'. Upper surface irregular with small channels.

C. At base 2" to a foot of yellow gray or buff dolomite with one or 2" of coarse sand & pebbles up to 1/2". Above the sand are 4' of brown unfossiliferous dolomite. Pocket of green shale collected. upper surface irregular.

D. Solon - All independens zone 15'. Well fractured limestone. The Solon overlaps the bed C to north in about 80' from the south wall along the East Wall. Greatest thickness of Solon on E wall near north end. Is much fractured light blue gray. Contained also Hypothyridinia but they were poor.



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May 17
Buffalo Farm -
347a = 6612 - [[NW'?NE'?]] 17-96N-18W

[[left margin]] 2nd Active shale
A - Irregular, rough massive buff dolomite 6'
D

[[left margin]] 1st active
B - Light blue gray shale 9'

[[left margin, bracketed under [Rock Grove]]] Massive dol. zone
C = 6612
C - Heavy bedded dolomite with platyrachella [[?]] zone 5-6'

[[left margin, bracketed under [Rock Grove]]] Shale 9'
B

[[left margin, bracketed under [Rock Grove]]] Massive Irregular rough dolomite 6'

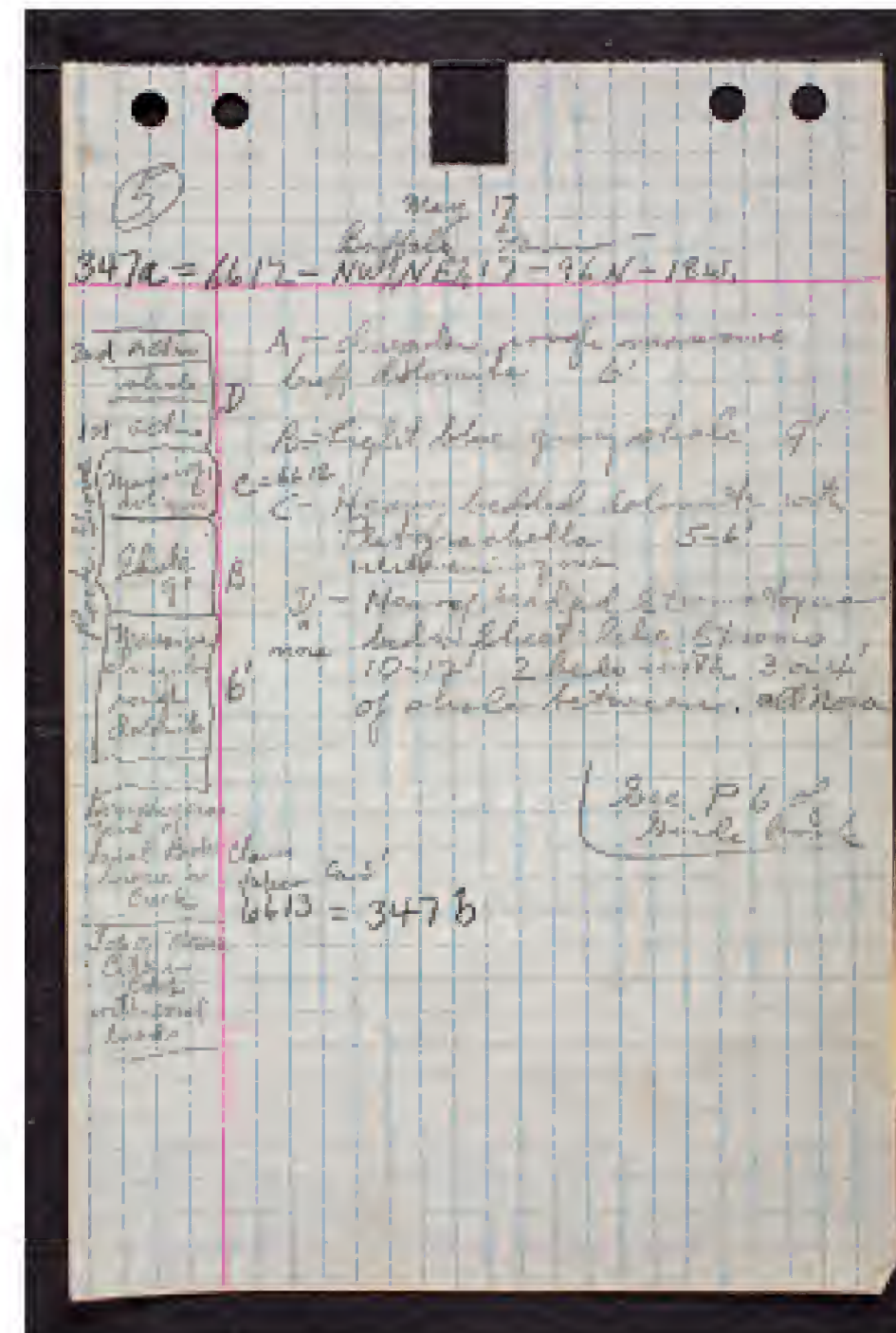
[[off to right side]]
See P6 of Guide book

D - Heavy bedded [[st?]] beds. Sheet-like stromo 10-12' 2 beds with 3 or 4' of shale between. all [[?]]

[[left margin]]
[[?]] zone of basal Rock Grove in Creek
[[line]]

[[Cla?]] taken [[Ca]] 3'
6613 = 3476

[[left margin]]
[[Tor of Moroon]] City in Creek with coral beads



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6
347c- 6614- about 3' above base of Mason City
Williams Qy., NW SW 28-96N-18W, SE of Nora Springs

347d= 6615- Hy D, Bridge Winnebago River
SW edge of Rockford, SW 1/4 NW 1/4 15-95N-18W, Floyd
Co., Iowa - ulsterensis zone of Rock Grove member. Top of Nora
Prismatophyllum from Mason City

347e= 6616- SWSW28-96N-18W
E. Bank Shellrock River Upper part Mason City. Strom zone at bottom. -
2 Stroms collected

347f 6617- Uppermost 2' of Mason City, in
stream NE 1/4 SW 1/4 28-96N-18W, just N of Williams Quarry.

347g= 6618- Under bridge on old Mason
City Rd in Nora Springs - about 50' up in Mason City, Idiostroma-Pachy
phyllum zone. SW 1/4 SE 1/4 7-96N-18W.

347h 6619- Top of Mason City, at Dam in
Nora Springs

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347c- 6614 - About 3' above
base of Mason City
Williams Qy., NW SW 28-
96N-18W, SE of Nora Springs

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347e= 6616 - SWSW 28-96N-18W
E. Bank Shellrock River
Upper part Mason City.
Strom zone at bottom. 2 Stroms
collected

347f 6617 - Uppermost 2' of Mason
City, in stream NE 1/4 SW 1/4
28-96N-18W, just N of
Williams Quarry.

347g= 6618 - Under bridge on old Mason City Rd
in Nora Springs - about 50' up in
Mason City, Idiostroma-Pachy
phyllum zone. SW 1/4 SE 1/4 7-96N-18W.

347h 6619 - Top of Mason City, at
Dam in Nora Springs

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May 18

347i 6620 - Cyrtospirifer - Lincoln Mill
Site on north bank Winnebago, SWNE 15-97N-21W; Cerro Gordo Co.
Nora (basal). Section on River bank, knotty limestone with occasional
corals. N of Mason City.

347j= 6621 - upper bed of 1st Actinostroma
zone of Nora, on W bank Shell Rock River, SE 1/4 NW 1/4 1-96N-19W,

347k= 6622 - Amphipora zone
NW 1/4 SE 1/4 27-97N-19W, west side Shell Rock R. Rock Grove Mem.

347l= 6623 - along rd NW NE 35-99N-20W,
Worth County
1st Actinostroma zone of Nora 2 miles E of US 65 east of Kensett

347m= 6624 - Shell Rock River, 0.4 mile N
of bridge on US18, NW 1/4 SE 1/4 7-96N-17W, Floyd Co., Iowa.

7 May 18
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side Shell Rock River, SE 1/4 NW 1/4 1-
96N-19W,
347k= 6622 - Amphipora zone
NW 1/4 SE 1/4 27-97N-19W, west
side Shell Rock R. Rock Grove Mem.
347l= 6623 - along rd NW NE 35-
99N-20W, Worth County.
1st Actinostroma zone of Nora
2 miles E of US 65 east of Kensett
347m= 6624 - Shell Rock River, 0.4 mile
N of bridge on US18, NW 1/4 SE 1/4 7-
96N-17W, Floyd Co., Iowa.

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May 19 Bridge over Winnebago River
5.3 on Floyd Co. D
Entrance to tile yard - 6.2
Road cut upper CerroGordo
Upper CerroGordo cut over fence
7.3

363a= 6625 - Tile yard

363b= 6626 - 1.2 mile by road W of bridge

363c= 6627 - 2 miles on Co. D west of bridge

363d= 6628 - near top of hill in road cut about 1/4 mile S of S bend of Co. D at S bend.

363e 6629 - Rd cut at Bird Hill. Highway dept has destroyed the old locality by cutting the road back.

Fred Dorheim & Don Cox helped us find places around Mason City.

8

May 19 Bridge over Winnebago River
5.3 on Floyd Co. D
Entrance to tile yard - 6.2
Road Cut upper CerroGordo
6.5
Upper CerroGordo cut over fence
7.3

363a=6625 - Tile yard
363b=6626 - 1.2 mile by road W of bridge
363c=6627 - 2 miles on Co. D west of bridge
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363f= 6630 - Owen ls. Heavy bedded limestone or dolomite.

[[image: pencil diagram of layers of soil]]

[[image labels]]

4'

2' C

3' B

Partly covered 6' A

A - Massive blue ls weathering brown with abundant *Stromatopora* helter-skelter in rock 6'

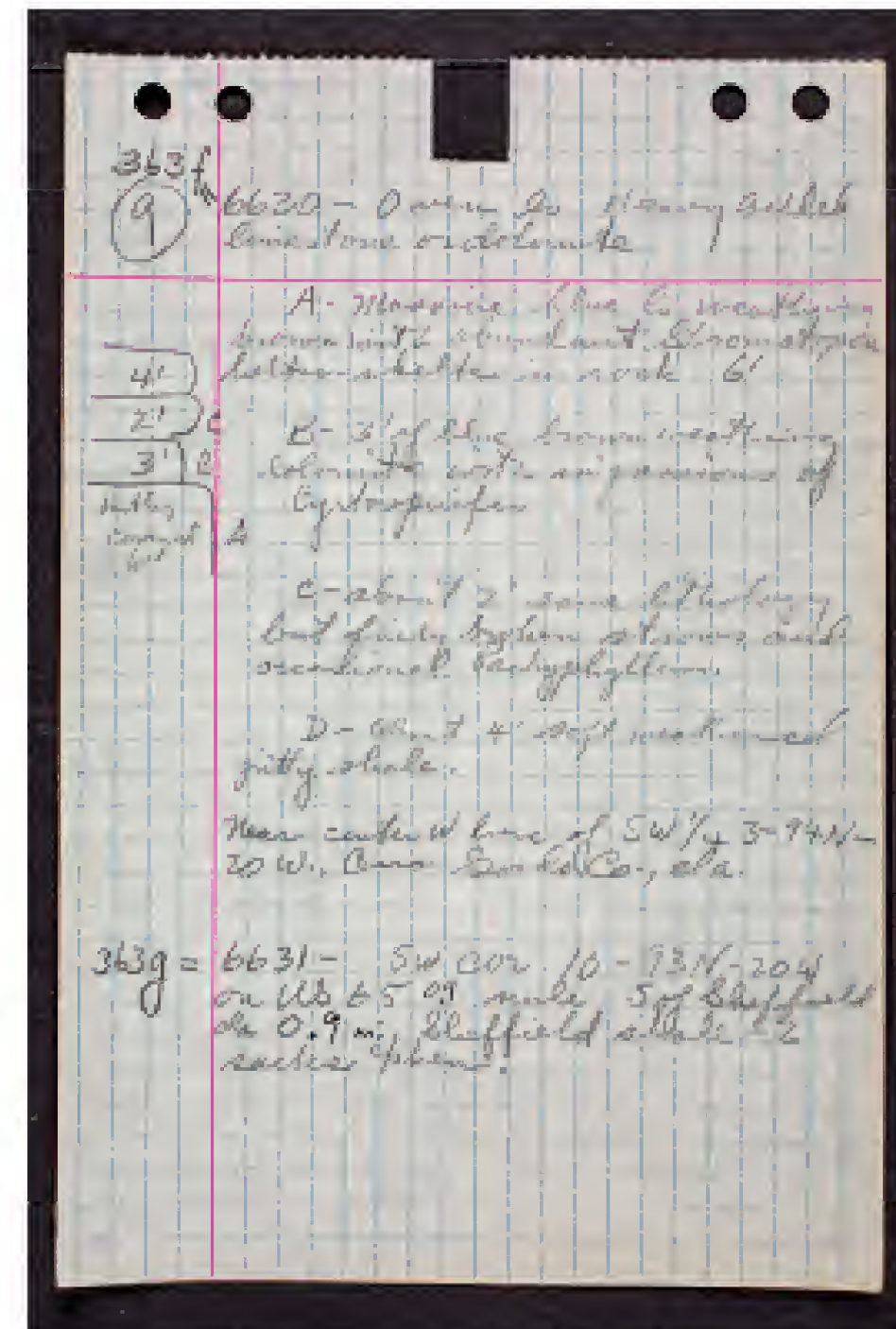
B - 3' of blue brown weathering dolomite with impressions of *Cyrtospirifer*

C - about 2' same lithology but finely broken stroms and occasional *Pachyphyllum*.

D - about 4' soft weathered gritty shale.

Near center W line of SW 1/4 3-94N-20W., Cerro Gordo Co., Ia.

363g= 6631 - SW cor. 10-93N-20W on US65 0.9 mile S of Sheffield Ia 0.9 mi. Sheffield shale - 2 sacks taken.



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May 20
Iowa farm (Roll 2 color F7, F8 just N of Mason City, W side US65

335b 6632 - Abandoned Qy on N side US20 1/2 mile E of intersection with Iowa 150, E edge of Independence, Ia
Small quarry showing about 3-4 feet of Independence zone and about 10' of profundum zone.
Large *Atrypa* abundant, *Gypidula* very rare.
Small channel of probable Independence shale. = loc 6633=335d

335c-6632a - Same as 6632 but from the profundum zone - base of this zone with many *Cystiphyllum*

335e 6634 - large quarry exactly 1 mile on U.S. 20 east of its junction with Ia 150, on south side of road.
Section has Davenport, and Solon with a thin Independence zone and possibly 10' of profundum zone.

Called on Mr Leverson in morning.

6635 coal from sink in 6634.

335b
May 20
Iowa farm (Roll 2 color F7, F8 just N of Mason City, W side US65
6632 - Abandoned Qy on N side US20 1/2 mile E of intersection with Iowa 150, E edge of Independence, Ia
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May 21

333a- 6636 - Nichols Farm Qy, 2 miles NE of Vinton - Rensselandia beds N side of Quarry in lower part of Profunda zone

333b- 6636a - Vinton Qy. but beds in and between Rensselandia beds

333= 6636b - Beds with ~~out~~ Independencis

On N side quarry in a small pit independ. zone makes floor and about 1 1/2' above. Has only independencis in it. Over this occurs Rens zone beds. Also found Rens. in beds that seem to be just with or under independ.

In and over the Rens. beds come granular layers with large Spirifer and Spinatrypa & large Schizophoria This suggests independ. zone but it does not have independ. I think it belongs to Profunda

333d 6636e - Rens. with independencis

6636c Same Qy but with ^ out independ.

333c 6636d " [[ditto for: Same Qy]] but Sp. iowensis beds

334a Prof Zone 6637 - N from Center Point on Iowa 150, 2 miles from Washington St. to Linn Co 55, 0.2 mile on 55 to Linn Co. 112, .015 mile to small pit & road cut

May 21
333a 6636 - Nichols Farm Qy, 2 miles NE of Vinton - Rensselandia beds N side of Quarry in lower part of Profunda zone
333b 6636a - Vinton Qy. but beds in and between Rensselandia beds
333= 6636b - beds with independencis
On N side quarry in a small pit independ. zone makes floor and about 1 1/2' above. Has only independencis in it. Over this occurs Rens zone beds. Also found Rens. in beds that seem to be just with or under independ. I think it belongs to Profunda
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[[circled in margin]] 12 [[/circled in margin]]

May 22

340a 6639 - Bellula zone Qy 100 yds E of bridge over Cedar R on Urbana - Shellsburg road.

344b=6640 Independencis zone
344b(1)=6640a Lower Rensselandia
344b(2)=6640b Up. Profundum zone

Qy on W side of small creek center W side SE 1/4 21-88N-8W, about 2 miles NW of Quasqueton, Buchanan Co., Iowa

10-20 of Independencis zone in lower part and about 20' of Profundum zone. Latter well exposed. Rensselandia appears with Cystiphyllum just above the Independencis zone.

335f=6641 Road cut NW 1/4 28-88N-8W, Liberty Tp., 0.15 mile west of bridge over Pine Creek.
f(1)= 6641 - Independencis
f(2)= 6641a - Profundum
About 5' of upper independencis zone and about 10' of profundum zone. Rensselandia low, just above indep. zone. Hypothyridina about 4' below Profunda zone

12 May 22

340a 6639 - Bellula zone Qy 100 yds E of bridge over Cedar R. on Urbana - Shellsburg road.

344b = 6640 Independencis zone
344b(1) = 6640a Lower Rensselandia
344b(2) = 6640b Up. Profundum zone

Qy on W side of small creek center W side SE 1/4 21-88N-8W, about 2 miles NW of Quasqueton, Buchanan Co., Iowa

10-20 of Independencis zone in lower part and about 20' of Profundum zone. Latter well exposed. Rensselandia appears with Cystiphyllum just above the Independencis zone.

335f = 6641 Road cut NW 1/4 28-88N-8W, Liberty Tp., 0.15 mile west of bridge over Pine Creek.
f(1) = 6641 - Independencis
f(2) = 6641a - Profundum
About 5' of upper independencis zone and about 10' of profundum zone. Rensselandia low, just above indep. zone. Hypothyridina about 4' below Profunda zone

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351a

Independence shale

6642- Go south in Brandon on westernmost street, for 2 miles exactly, then turn west to end of road just off turn of road. Park. Follow brook to river 275' or 110 paces south of point where brook flows into river is Independence in a funnel-like depression in The Independence zone of the Solon Member.

Independence shale
6642- Go south in Brandon
on westernmost street, for 2 miles
exactly, then turn west to end of
road just off turn of road &
Park. Follow brook to river.
275' or 110 paces south of point
where brook flows into river is
Independence in a funnel-like
depression in The Independence
zone of the Solon Member.

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May 23
358 = 6643 Linwood quarry on Ia 22 One mile E of Buffalo, Iowa

358a 6643a - Top bed of active quarry

358b 6643b - Athyris beds

358c 6643c - upper beds with Schizophoria

Travelled from Independence Ia to Hannibal, Mo.

May 24
384a = 6655 - 500 feet (225 paces) up lateral gully
shaly ls with numerous Spirifers continuous exposure up to 400 paces
with Spirifer all the way
80 paces up side gully, poorly bedded massive ls. culminating in Knotty
hard ls.
80-128 paces = 5 1/2 vertical same massive ls. but with poor snails

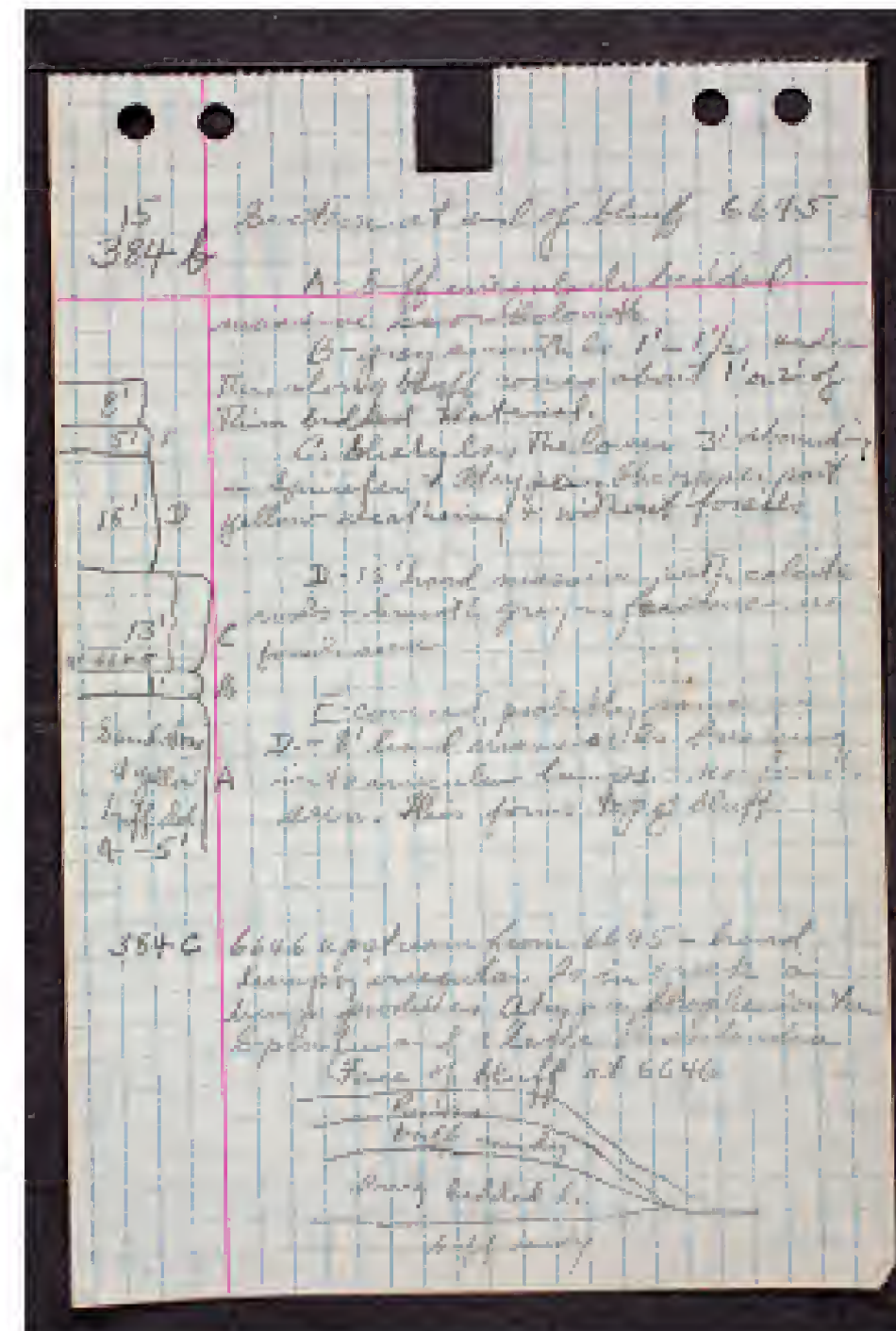
May 23
358 = 6643 Linwood quarry on Ia 22
One mile E of Buffalo, Iowa
358a 6643a - Top bed of active quarry
358b 6643b - Athyris beds
358c 6643c - upper beds with
Schizophoria
Travelled from Independence Ia
to Hannibal, Mo.
May 24
384a 6655 - 500 feet (225 paces) up lateral
gully shaly ls with numerous Spirifers
continuous exposure up to 400 paces
with Spirifer all the way
80 paces up side gully, poorly bedded
massive ls. culminating in Knotty hard
ls.
80-128 paces = 5 1/2 vertical same massive
ls. but with poor snails

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15 Section at end of bluff 6645
 384b
 drawing of stratigraphic section with labels as follows]]
 8'
 5' E
 15' D
 13' C
 3' 6645
 1' B
 Sandstone & yellow buff dol. 4-5' A
 [[/margin]]

A- buff irregularly bedded massive ss or dolomite
 B - gray smooth ls 1'-1 1/2' under this along bluff comes about 1' or 2' of thin bedded material.
 C. Shaly ls., the lower 3' abounding in Spirifer & Atrypa. The upper part yellow weathering & without fossils
 D. - 15' hard massive, with calcite rods - Smooth gray in fracture - no fossils seen
 E - covered, probably same as D. - 8' hard massive ls. breaking into irregular lumps. - no fossils seen. This forms top of bluff.

384C 6646 upstream from 6645 - hard lumpy irregular ls in creek a lump produces Atrypa, Stropheodonta Spirifer and a large Rensselandia
 Face of bluff at 6646
 [[image showing layers labelled as follows]]
 Renss
 buff sandy
 Irreg. bedded ls.
 buff sandy



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6646

drawing of stratigraphic layers labelled as follows

15' F

22' E

4' D

3-4' C

6 1/2' B

3' A

A. - mealy hard, irregularly fracturing ls. containing occasional snails 3'

B - irregularly fracturing hard ls. with hard smooth knots 6 1/2'

C - fine grained ss of dolomite smooth conchoidal fracture. 3-4'

D - Finely granular irregularly splitting limestone abounding in Rensselandia and Atrypa

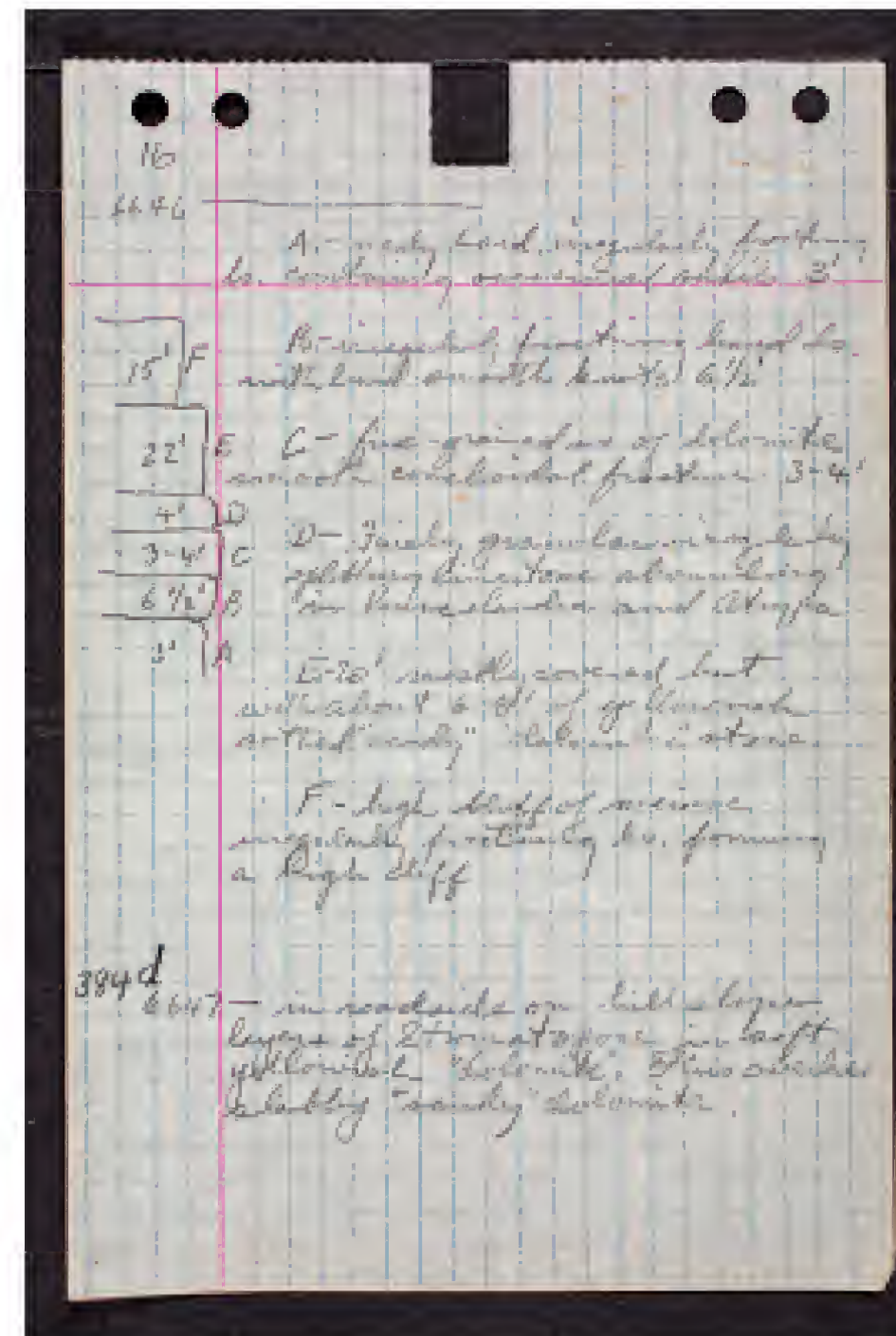
E - 20' mostly covered but with about 6-8' of yellowish rotted "sandy" "dolomitic" stone.

F - high bluff of massive irregularly fracturing ls. forming a high cliff

384d

6647

in roadside on hill slope layers of Stromatopore in soft yellowish "dolomite". This overlies slabby "sandy" dolomite.



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17

384e -

6648 - Mound of crinoidal and granular debris surrounded E, W and S by usual type of rock seen here, ie the smooth grained lumpy ls. 1250 paces downstream from old barn on N side of creek NW corner 14-56N-6W, Rensselaer 7 1/2' sheet, Missouri

384f=

6649 = Slabby limestone in layers 4-5" thick with *Magistocrinus* NW cor NW 1/4 15-56N-6W, Rensselaer 7 1/2' sheet, Mo.

A remarkable feature at 6646 is the wrapping of the Rensselandia beds from the creek bed over the fine grained hackly fractured ls. This suggests that Rensselandia beds are lime sands banked over hard layers. It also suggests that they are likely to be spasmodic in occurrence

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18
May 25

Central Stone Co Qy has 16' of "Callaway" overlying Kimmswick limestone which is the quarry rock.
W 1/2 sect 11
about 1/4 mile above bridge and going upstream about 1'. platy dove limestone

310 paces about 5-6' of rock exposed for 160 paces. 40 paces still farther upstream 4' more are exposed. First five feet hard nodular gray, smooth ls. Small waterfall over blocky, pitted brown gray rock heavy bedded making a thick ledge. Thus the end of the outcrop is at 500 paces. Here are 3' of hard brown nodular massive but no fossils.

500-864 covered

814 - 1' of nodular pitted hard ls.

814-920

865 - About 3' shaly ls. at 885 This is capped by 2-3' rotted brown, fine dolomitic sand.

[[image of two layers with labels as follows]]

Punky ls. 5'

Hard ls 3'

At 920 are about 5' of this punky rock which when fresh is hard shaly ls. Top of hard bed below punky bed has branching stroms.

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19

1130 - Punky beds at stream level
1400 - Some punky beds in small patches.
1600 - begins exposures shaly ls.
1760 - About 5' mostly hard massive limestone but some shaly. One poor snail.
1827 - About 8' of rock exposed in bank
2060 to bridge where there is brown ls.

6650 Exposures on HH for 2 miles east of junction with H. All are Kimmswick but at 6650 is a foot of coarse ss that might be basal Devonian.

6651 - About 8-10' of platy brown ls.

6652 - About 5' of sandy brown stone with *Atrypa*, *Spirifer*, possible Renss. Has lithology & irregular bedding of Renss.

6653 - Bluff with 60' of Devonian.

6654 - In road Ordovician with *Receptaculites* about 9"-1' of coarse ss and about 5' Devonian ls. brecciated in places, massive irregularly bedded + dove gray. ss about 50 yds S of bridge.

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20 6653 - Bluff in Cedar Creek consists from bed of creek to top of 60' of Devonian limestone, Hackly, massive irregular at bottom but becoming platy at top, 12' below top Cystria 25' from top, loose were Spirifer like those at the base of the cliff in section ~~in Sec~~ 28.

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20
 May 26
 Salt Spring Hollow Revisited
 400b Numbering as in section of 1942

1 1/2' E = 6659 = 400f

9-10' F 6658 = 400e

13' { 5' 6" D 6657 = 3 - 5' = 400d
 6656 = bottom 2' = 400c

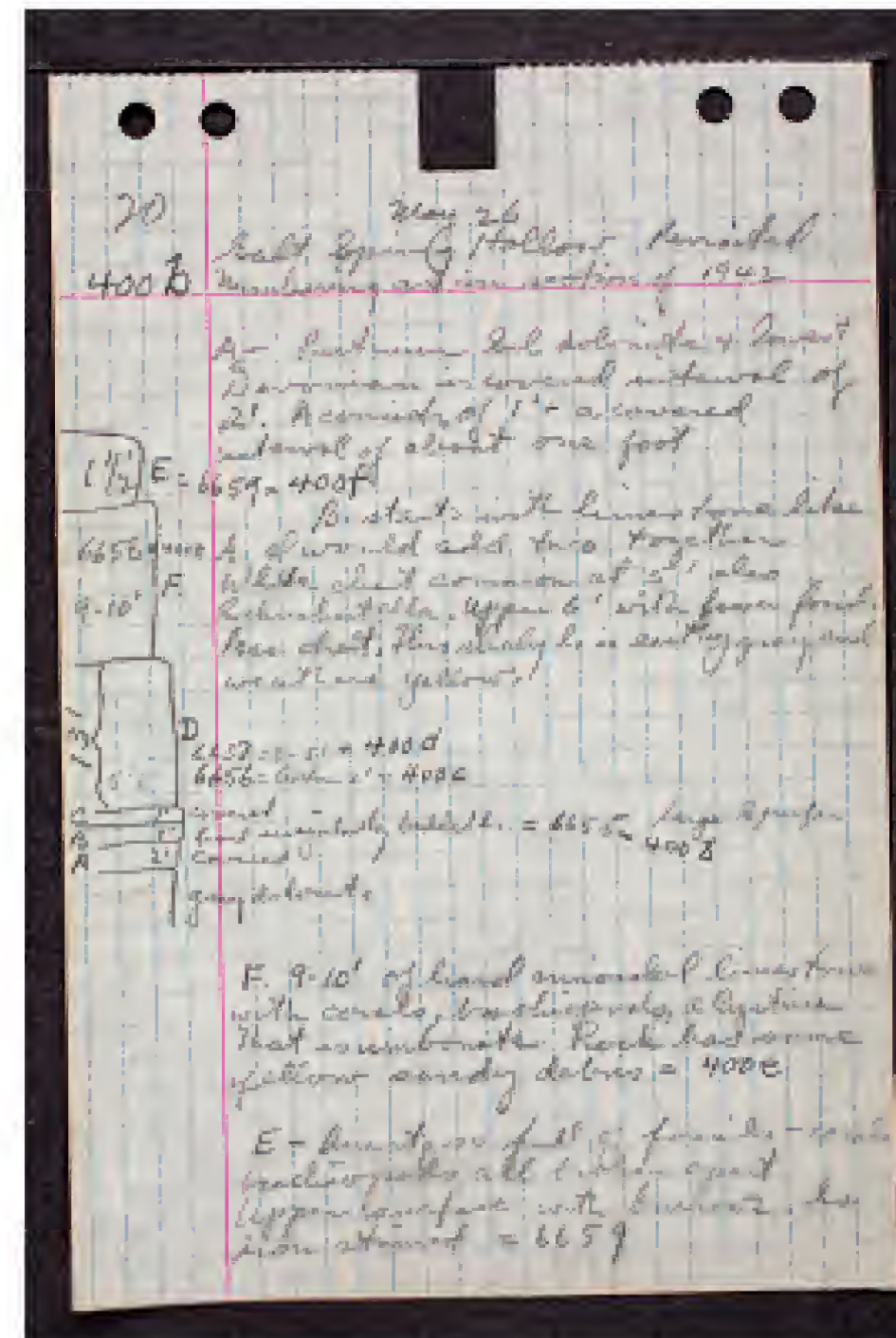
C 1' covered -
 B 1' hard irregularly bedded lr. = 6655 = 400b - large Spinifer
 A 2' covered
 gray dolomite

A - Between Sil dolomite & lowest
 Devonian is covered interval of
 2'. A consists of 1' + a covered
 interval of about one foot

B. starts with limestone like
 A. I would add two together
 White chert common at 5' also Schuchertella.
 Upper 6' with fewer fossils
 less chert. This shaly lr is earthy gray and
 weathers yellow.

F. 9 - 10' of hard crinoidal limestone
 with corals, brachiopods, a Cyrtina
 That is umbonate. Rock has some
 yellow sandy debris = 400e

E - Quartz so full of fossils - corals
 brachiopods all broken apart
 Upper surface with burrows. Ss
 iron stained = 6659



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21

400g=6660- Lone Star school revisited section begins opposite school on downstream side of dirt road and stream crossing

A - massive, nodular & cherty dolomite, porous but heavy 5' No fossils seen. Bedding irregular surfaces Rokey.

B - 4 - 5' of limestone very massive, fine grained with rods of dark calcite. More massive than below. Very suggestive of Cooper ls

C - 30 yards upstream from slot crossing comes falls over B. Here at top are black "phosphate" nodules. Here at the fall the bank can be climbed up to the ss bed. Makes the total thickness 23'. Lower 5' +- are heavier bedded than the median part and the upper 10' are more massive. Ls is earthy gray Large Spirifer at bottom. Cherty near the middle starting at about five feet. The large Spirifer is commonest in the first 5'. Stropheodonta comes in in first 5'.

[[margin notes]] 1 - 2' D

6662=400i

6661=400h

23'

6660=400g C

5' B

5' A[[/margin notes]]

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5' B

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22
6661 At about 15 up came bed of
cystiphyllum reminiscent of Profundum zone and also of beds at
Brussels.
From 3-6' below falls fossils abundant.
Chest extends to within 4' of top under ss.
D- hard limy ss, with many fossils.

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May 27

23 400j- [[margin]]

6663 - Sandstone at top of Lone Star school section, 3 miles E of Fieldon

400k NW [[margin]]

6664 - uppermost 6' at corner NE 1/4 SW 1/4 16-11S-2W, Locality in wooded ravine east of last house on road. House located at angle of road at d in Gilead.

May 28

6665- Jerseyville Hollow - top beds of Cedar Valley. Up Daggett Hollow - for about 2 miles. Silurian all the way

400-l [[margin]]

Brussels 6666

Roadside just W of bridge 1/2 mi W of Brussels. Section from top down

A- light gray shale

B- Sugary white ss with Atrypa and large Spirifer like "iowensis".

C- 2.1" inches yellow weathering earthy irregularly bedded ls. with Cystiphyllum, Spinatrypa, Cranasua with color

D- Limestone bed jammed with thin Cystiphyllum

6666d

[[margin image with 8 sections with the following measurements in form of column]]

A

2' B

21" C

32" D

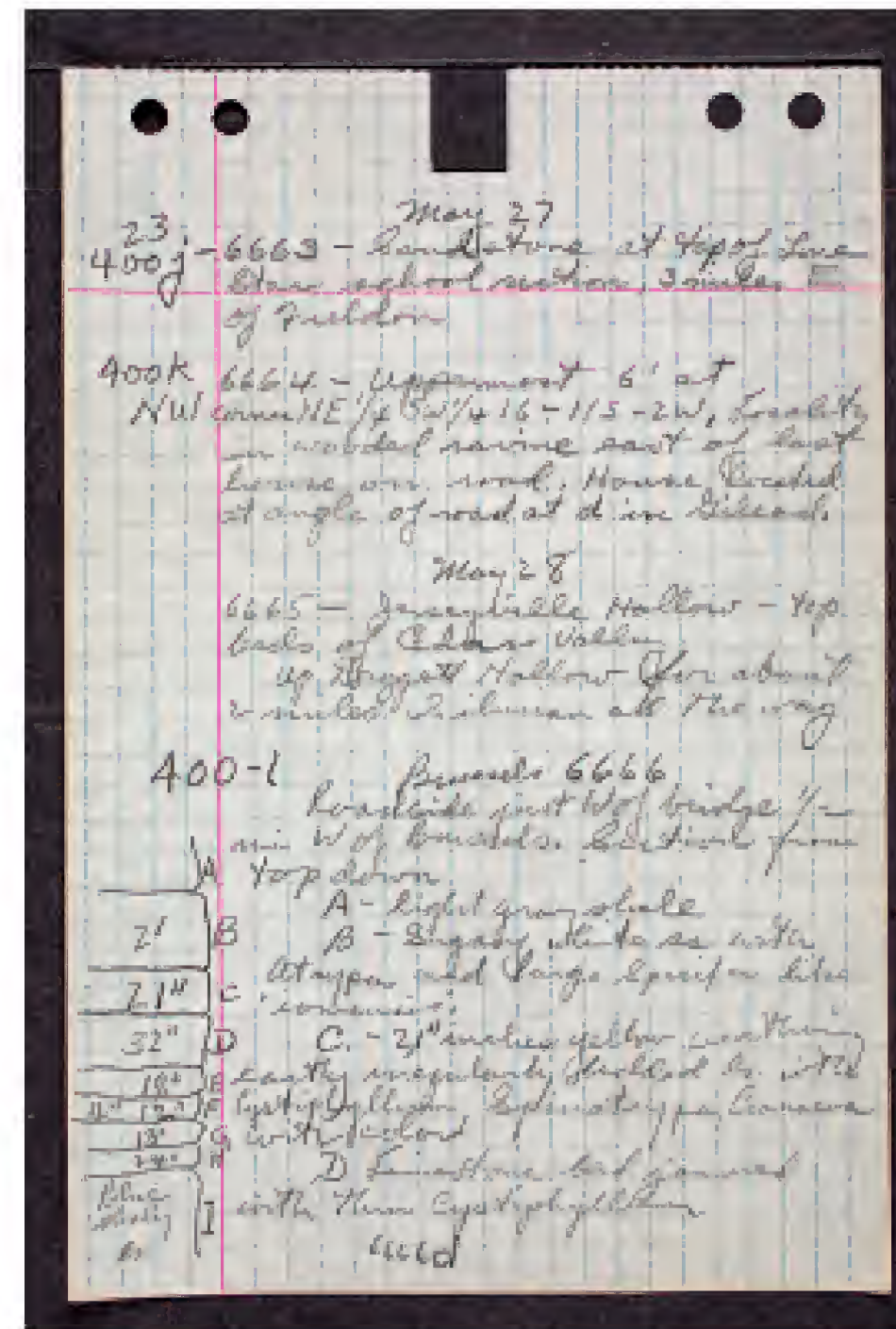
18" E

12" 12" F

13" G

24" H

Blue shaly ls. I [[margin]]



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24
 E-18" earthy ls jammed with Cystiphyllum
 F-12" Earthy blue, yellow weathering ls with Atrypa & chert.
 G. - Earthy ls packed with Cystiphyllum 13
 6666H
 H - 24" of blue earthy yellow weathering ls with some scattered Cystiphyllum Phosphate nodules
 I - Maquoketa
 6666H

Excellent exposure of the Devonian now opened on the road just across bridge on Lincoln Co by Y about 1/2 mile W of Brussels.
 Exposures also in Creek. On N side of road is Maquoketa and on south side of road is complete section of Devonian with gray shale above it. A total of 12', ten feet of the ls and about 2' of ss. The ss is irregular in thickness and may not be present everywhere because we did not see it in the Creek section.
 Spinatrypa is fairly common in the upper part of the section but small Cystiphyllum is the most conspicuous element

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25

Collections

400n= 6666 B= top ss.

400m= 6666 C= next lower bed with abundant fossils

400-} 6666 D= Hard Cystiphyllum bed

May 29

SE1/4SE1/4 21-47N-5W.

Section on Mo 19, 1.25 miles N of Big Spring

A- light gray dolomite with flattish bedding= Jeff City ?

B- 5' irregularly bedded earthy brown ls, granular, with Echinoderm debris

C- Pinkish to white crinoidal limestone, cross-bedded, 3 1/2-4'

D- Finer grained calcarenite with numerous small cupped Hexagenaria
=6667 Dark gray in fracture-contrasts with C in color 3 1/2-4'

E- About 3' dark gray weathering but light gray finely granular ls. with scattered crinoid stems

F- 3 1/2' creamy white, crinoidal limestone to pinkish with many

[[margin image with six sections in form of column]]

H
6668
14' G

4 1/2' F

3' E

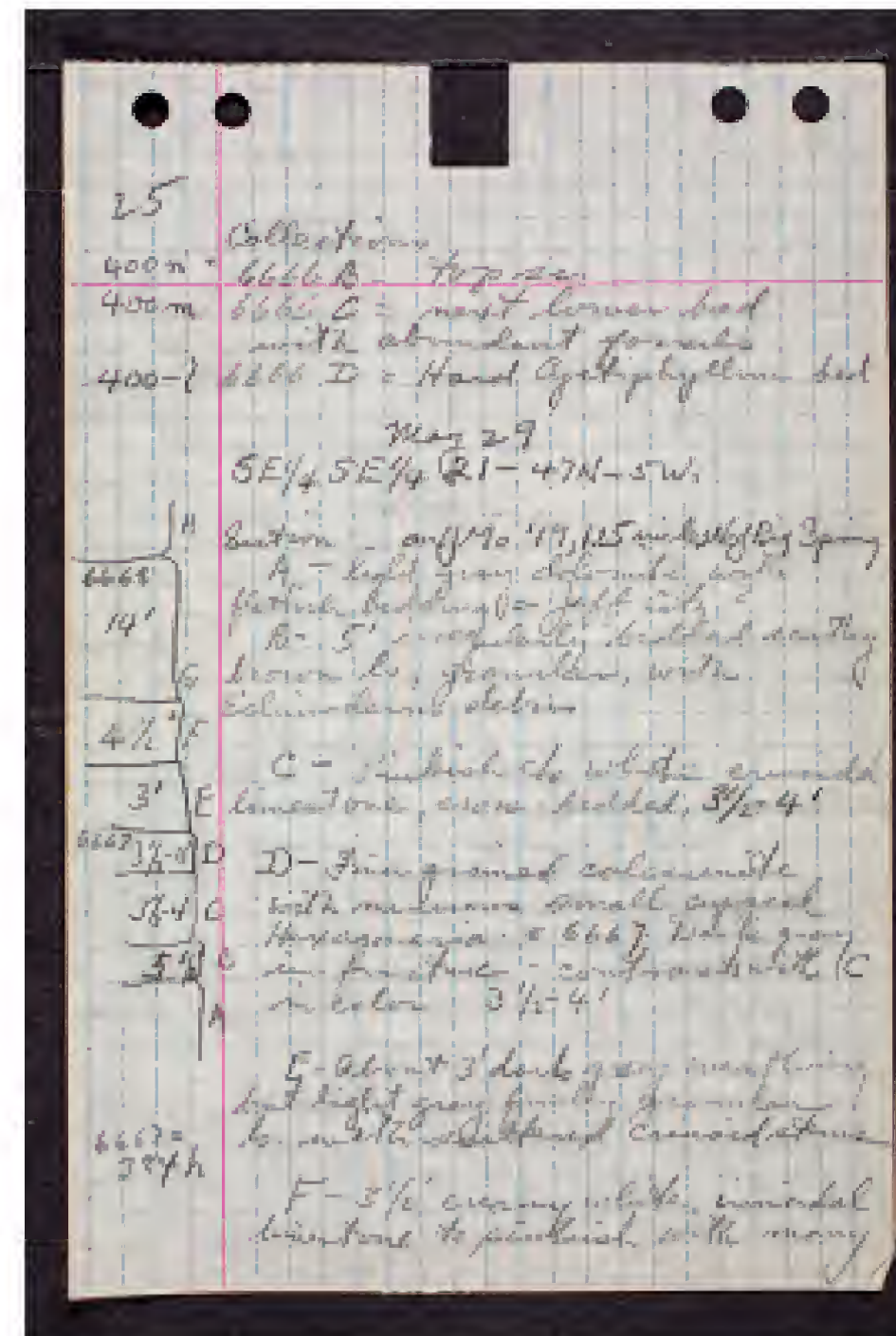
6667 3 1/2 - 4' D

3 1/2 - 4' C

5 1/2' B

A

6667= 384h



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26

small crinoid particles

G - comes at curve in road and gap in section A level sight indicates that bottom of section on N side of curve is at very top of F without a significant gap. At top of G is 6th bed with many small corals - may be float. On north side curve lowest & rock is dark gray crinoidal ls. with some brocciated material - with fossils but impossible to get out of fresh rock.

Just 5' from top is a thin ss 1 to 5" thick.

Top overlain by Snyder Creek shale

Upper surface pitted & with lomatite nodules, suggesting pyrite

384i= 6668 - specimens from top 2-3'.

384j= 6669 - " [[Ditto for: specimens]] throughout G by Tom

H - Snyder Creek 6670=384k

This section is 1 1/4 miles N of Big Spring and 0.9 mile N of Junction with Co. J.

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27

Section on County highway J (Montgomery Co.), 3.25 miles south of Mincola. Line between NE cor 15 and HW cor 14-47N-6W.
A - platy dolomite

B - 15" - 3' sandy limestone with fish fragment. I regular surface on bottom. Thickens & Thins

Diagram showing cross section depths of soil levels]

1 J
1 I
11' H
3' G
7' F
6' E
2' D
5' C
15" - 2' B
A

C - 6 feet of drab earthy weathering buff gray limestone with white chert. Sandy, few fossils

D - 2' Buff gray, granular limestone with some chert. *Atrypa occidentalis* type = 6673

E - 6' cream granular ls much crinoidal debris

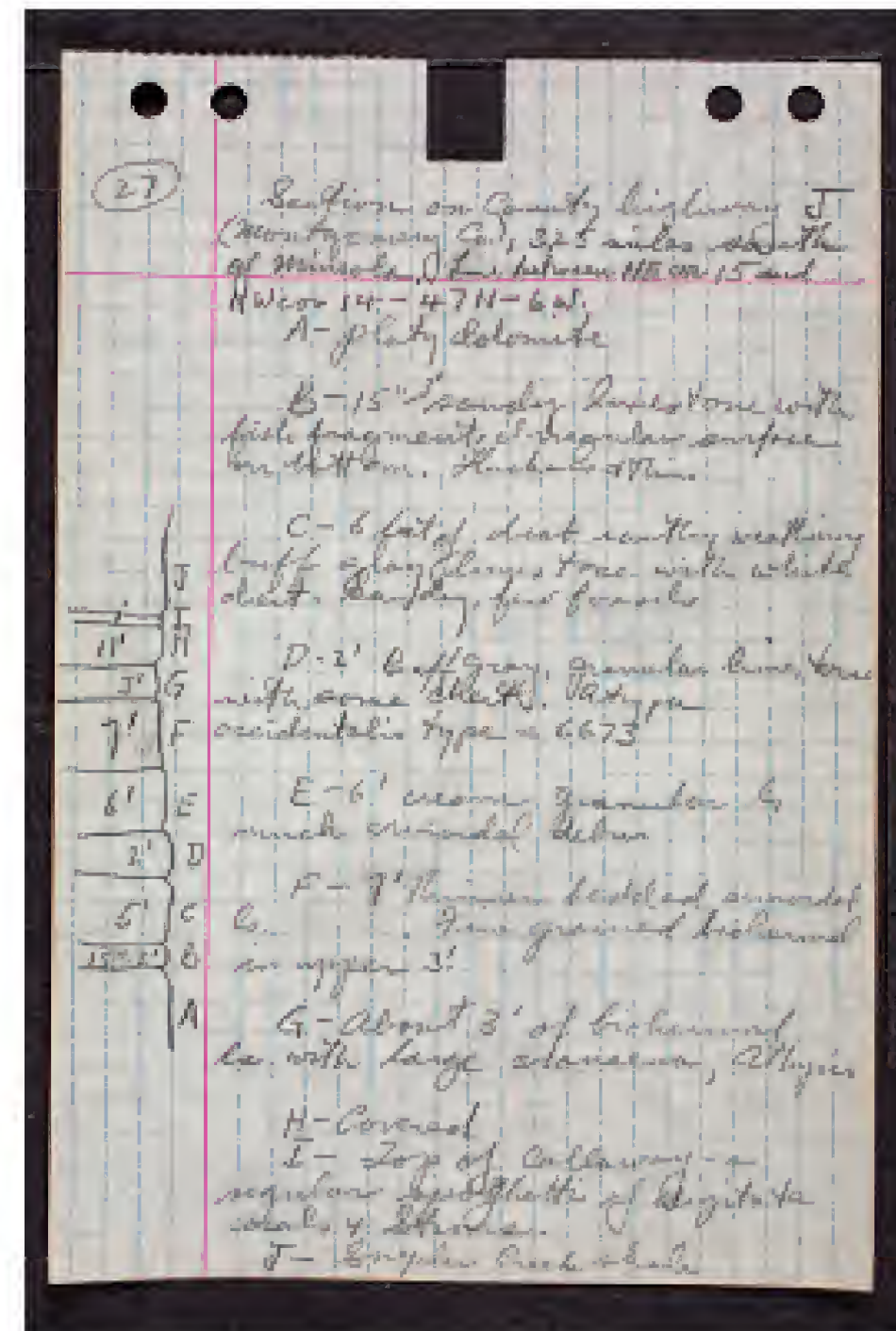
F - 7' Thinner bedded crinoidal ls. Fine grained biohermal in upper 3'.

G - About 3' of biohermal ls. with large cranaena, *Athyrics*

H - Covered

I - Top of Callaway - regular spaghetti of digitate corals & Stones.

J - Snyder Creek shale



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28

384-I 6671 - Bed G - lower part upper Calloway

384m 6672 - Very top of Calloway

384m 6673 - Slabby beds from bed F
Picture taken

SW 1/4 SE 1/4 29-48N-6W.

On old & new US 40, 1.9 miles west of Mineola, measured an old 40=
Co Hy N.

At east end of cut some 15' Ordovician light colored crudely laminated ls.

Contact irregular, small black lumps at base of Devonian and small shaly lumps.

Devonian confused as to lithology ranges from coarsely crinoidal to fine-grained limy ss or limestone. Color varies from cream to orange & brown.

Brown masses usually fine grained. Corals common usually small but some colonial, a large-cupped Hexagonaria

Bedding of Devonian highly irregular

Grayish drab shale appears to occupy cavities in the Devonian

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384-I 6671 - Bed G - lower part upper Calloway
384m 6672 - Very top of Calloway
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29

Near west end of cut orange brown eastly limestone contains small Cystiphyllum and reminds strongly of the Cystiphyllum beds seen at Brussels Mo.

284o 6674 - gray shale from "sink"

284p

6675 - Atrypa bed at top of section - 1-2' packed with small atypica (local)

284q 6676 - Crinoids scattered

284r 6677 - Phillipsastraea from brown beds

284s

Cystiphyllum beds rear base

284p

6679 Roadside exposure one mile N of Old US 40 junction with Co N on County Hy. N. between Mineola grid Williamsburg NW 1/4 SW 1/4 29 - 48 N.-6 W

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30

May 30
6680 Bellama Springs
Lowest beds exposed are Ordovician coming up hill top beds exposed are about 1 - 1 1/2' of irregularly bedded ss.
This overlies green shale & thin bedded limestone. The ss may be the beginning of the Dev. but I saw no fossils,

[[image: diagram of cross section of levels of soils]]

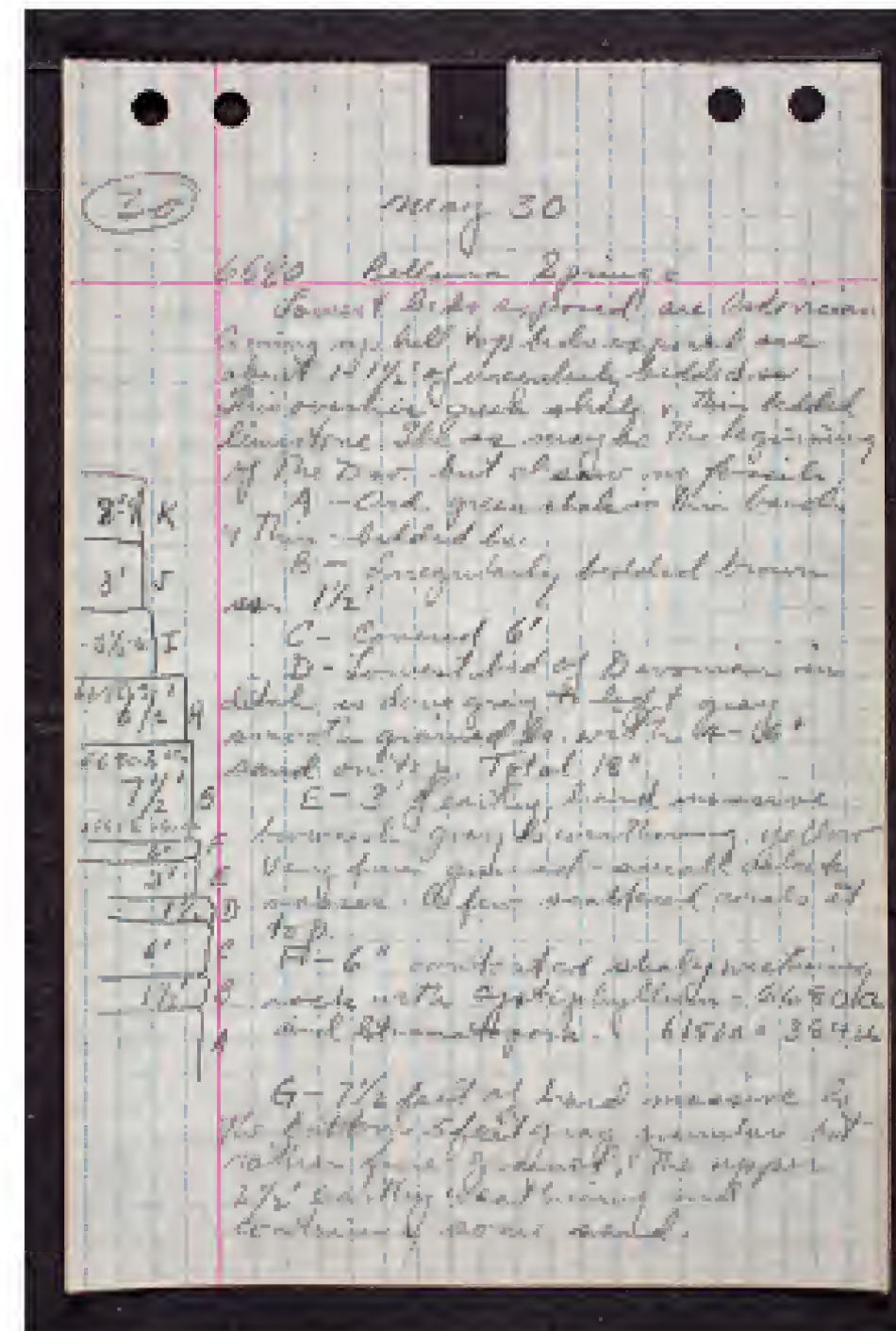
[[image labels]]

8'-9' K
3' J
3 1/2 - 4' I
6680c
6 1/2' H
6680 b str.
7 1/2' G
66808 algae =
6" F
3' E
1 1/2' D
6' C
1 1/2' B
A

[[/image labels]]

A - Ord. green shale in thin bands & this - bedded ls.
B - Irregularly bedded brown ss. 1 1/2'
C - Covered 6'
D - Lowest bed of Devonian in ditch is dove gray to light gray smooth grained ls. with 4 - 6' sand on top. Total 18'
D - 3' of earthy, hard massive brownish gray ls weathering yellow
Very fine grained - small calcite masses. A few scattered corals at top.
F - 6" contorted shaly weathering rock with cystiphullum = 6680a and Stromatopora. 6680a = 384u

G - 7 1/2 feet of hard massive ls The bottom 5 feet gray granular but rather fine grained. The upper 2 1/2' earthy weathering and containing some sand.



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31
bottom bed of 2 - 2 1/2' is packed with corals and spaghetti like algae
Top has moderately large Stroms.

H - 6 1/2' - lower 5' dark gray fine grained granular ls. packed with corals, especially Hexagonaria which occur Geltec skelter. Top foot and a half with few corals but strongly crinoidal top 3 - 4 inches very sandy.
6680C = 384w

I 3 1/2 - 4' in 2 ^{equal} layers separated by 4 or 5" of shaly rock all characterized by a great abundance of Atya and occasional Stropheodonta. Middle seam of shale = 6680D. = 384x

6680f → J - 3' in 2 equal beds with shale parting - abounds in cup corals (strongly centrally tabulate) and large Stropheodonta

K - 7' biostromal limestone, a mass of fist-size Stroms and small Stroms. The size of a pencil in diameter. Upper foot or two at top with few Stroms
6680e. = 384y

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32

This locality is on Fulton Co. by O 0.15 miles south of intersection at elevation 743 = NE 1/4 NW 1/4 1 - 46N - 9W.

Section

6681 = 375a

SW 1/4 SE 1/4 1 - 46N-9W, 2 miles NE of Hans Prairie, Fulton [square symbol], Missouri

A - Green shale and dolomites ls & thin-bedded ls. of Ord.

B - 1 1/2' gray limestone with stringers of brown ss.

C - 2' dove gray, fine - grained ls no fossils seen.

D - 2 1/2' earthy weathering sandy ls

E - 3 1/2' Irregularly-bedded dark gray ls. with scattered cup corals. About 1' up is somewhat shaly bed with black ls = Stroms like bed F at Bellama Sprs. section.

F - 3 1/2' fairly massive very sandy limestone with Stropheodonts

G - 4 1/2' in massive gray ls abounding in Hexagonaria
6681G [arrow]

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Section
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F - 3 1/2' fairly massive very sandy limestone with Stropheodonts
G - 4 1/2' in massive gray ls abounding in Hexagonaria
6681G

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33

H - 3 1/2' modular and earthy ls weathers light brown.

I - One foot bed abounding in *Atrypa* = 6681I

J - 5 1/2' in 6 beds, the upper ones with shaly partings -
[[*Stropheodonta*?]] The upper most bed is a foot thick and has scattered cups corals. Large *Seliophoria Atrypa* Coll. of Stroph = 6681J = 375b

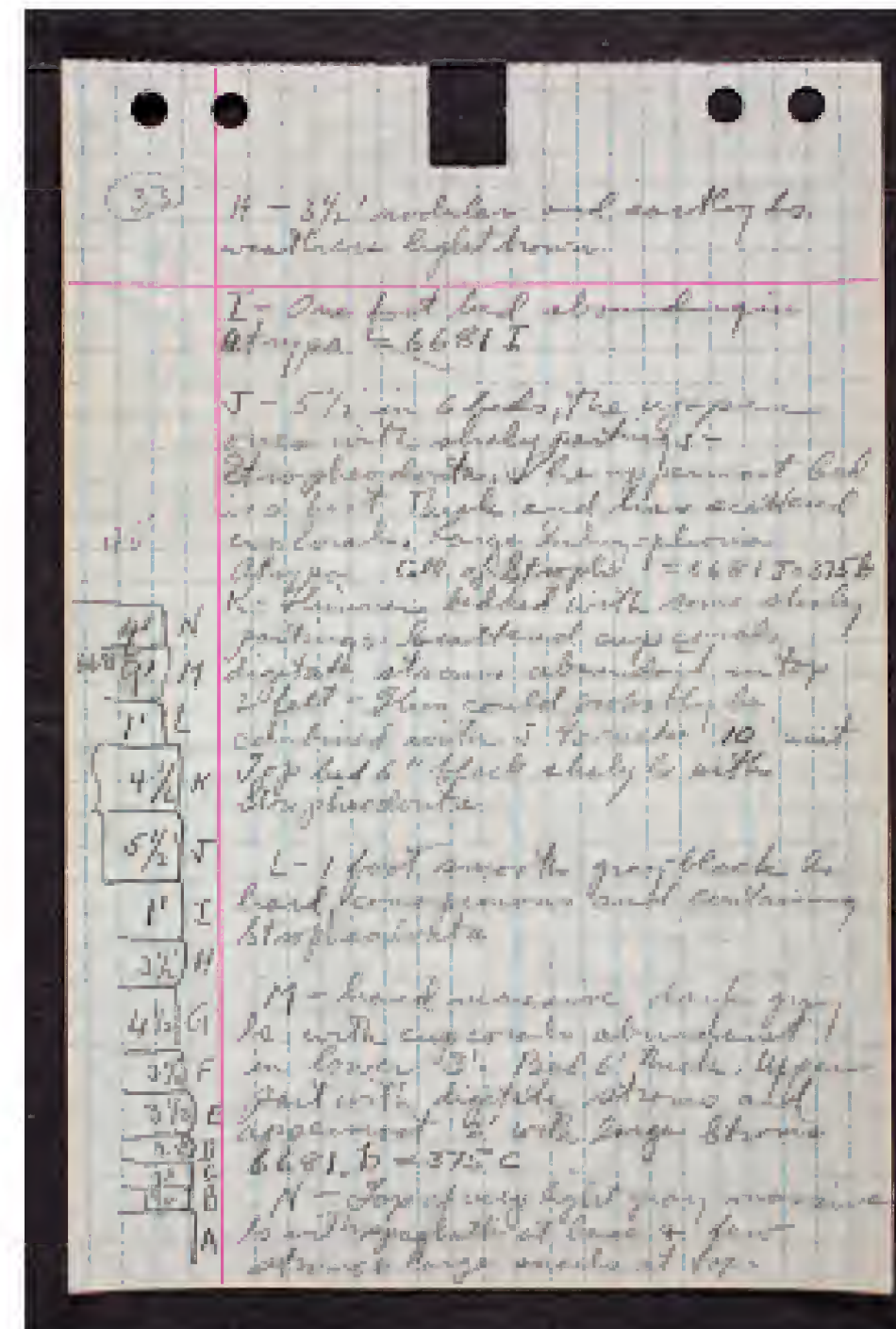
K - Thinner bedded with some shaley partings. Scattered cup corals digitate stroms abundant in top 2 feet - This could probably be combined with J to make 10' unit
Top bed 6" black shaly ls with *Stropheodonta*

L - 1 foot smooth gray-black ls hard conspicuous and containing *Stropheodonta*

M - hard massive dark gray ls. with cup corals abundant in lower 3'. Bed 6' thick. Upper part with digitate stroms and uppermost 2' with large Stroms

6681.b=375C

N - Top of very light gray massive ls with spaghetti at base & few Stroms & large snails at top.



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34

377c 6682 - Upper Snyder Creek ^ Schizophoria bed
on Cow Creek SW of Yucatan
SE 1/4 SW 1/4 24 - 47N - 7W, Fulton

375d = 6683 - Snyder Creek, on Snyder Creek, SW 1/4 17 - 46N - 9W,
Fulton.

34

Schizophoria bed

377c 6682 - Upper Snyder Creek, on
Cow Creek SW of Yucatan
SE 1/4 SW 1/4 24 - 47N - 7W, Fulton

375d = 6683 - Snyder Creek, on Snyder
Creek, SW 1/4 17 - 46N - 9W, Fulton.

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May 31
 380b - 6684 - Rensselandia ledge
 Coucet Rensselandia beds south of Ashland to NW 1/2 SE 1/4 SW 1/4 1-45N-12W. I have it as 11 west but it should be 12.
 Visited University of Mo and saw Dr. Freeman who was very kind and helped with localities & loaned books.
 Went to large Rensselandia locality south of Ashland and collected for about 5 hours. To get to this place take road at intersection marked 830 in SW 1/4 of sec 11-45N-12W. Follow This road to site of Sycamore school. Take old lane beside school up hill for about 0.3-0.4 mile, then go to left across gully. Here Cooper lithology rests on Jeff City dolomite. This is followed by the Rensselandia beds, 8 or 10' Thick.
 According Fraimfelter there are 45' of beds here. The Rensselandia is overlain by Cooper lithology SE 1/4 SW 1/4 SW 1/4 1-45N-12W Jefferson City \square , Boone Co., Mo.

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[[circle]] June 1

6685 Lupus

[[margin]]

Chouteau E

6' D

6" - 1' C

6' B

Jeff City A

[[/margin]]

350' NW on RR and at point of hill in a large quarry with floor at about 580'. Just 20' above qy floor on south side is dolomite with green shale and at very top is 2' of flat bedded dolomite. This is followed by 6' solid hard limey ss, 18" below top comes Rensselandia in a bed about 1 foot thick. Upper surface of ss with sea-weed or tidal markings.

c-1' sandy shale

D-4' of dark gray ls with few fossils

E - light blue - weathering slowly ls but contact not clear = Chouteau

Quarry view f8, f9 at 1/250

Contact of Callaway + Ord at 600'

Contact of Callaway + Chouteau difficult to spot

6685a - Chouteau from Quarry

[[margin]]

Columbia

(15') Quad.

[[/margin]]

6685 - Quarry in point of Missouri River bluff, NW 1/4 SW 1/4 NW 1/4 23-47N, [[insert]]14W[[/insert]] On Missouri Pacific RR, 2 1/2 miles SE of Lupus, Moniteau Co., Mo

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6685 - Quarry in point of Missouri River bluff, NW 1/4 SW 1/4 NW 1/4 23-47N, 14W On Missouri Pacific RR, 2 1/2 miles SE of Lupus, Moniteau Co., Mo

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[[left margin - circled]] 37 [[/circled]]

381 b[[left margin]]

6686 - Reentrant in Mo. River bluffs - entered on east side and encountered Ordovician low in the bluff. On east side the Ord is directly overlain by Chouteau. We saw no Devonian. A short distance west in another ravine a few inches of ss were seen above the Ord. The ss contained Favosites. The ss lies on flat-bedded dolomite as in quarry. About 5' above the ss is a ledge of 1' of hard gray (dark) ls which looks like Calloway. This immediately followed by Chouteau with Shumardella. The Devonian is thus about 6' thick but the identification of all but ss is questionable

[[left margin]] [[image labels]]

F

3' E

12' D

20" C

3' B

A

[[image labels]] [[left margin]]

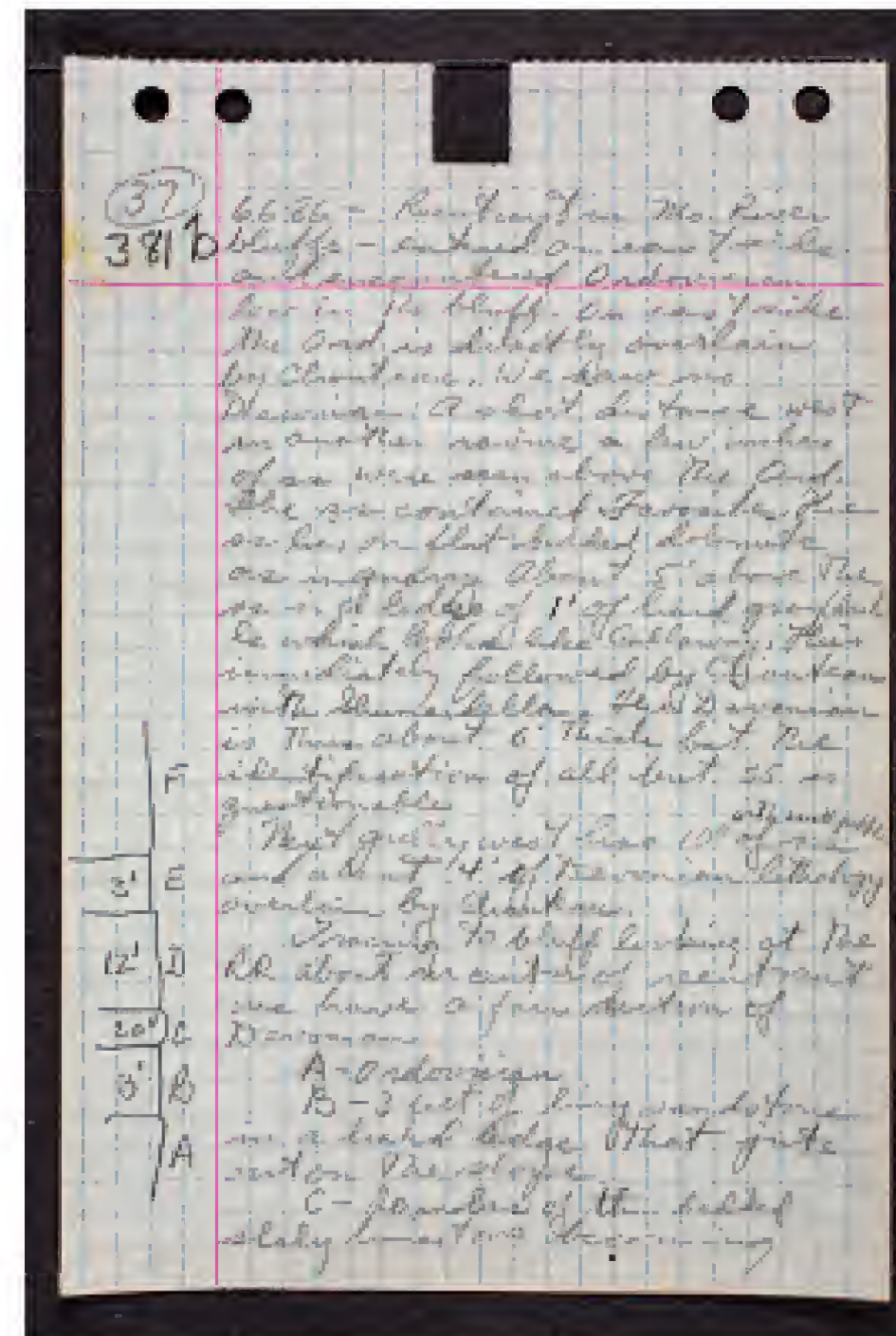
Next gully west has 10" [[insertion]] with small pebbles [[insertion]] of ss and about 4' of Devonian lithology overlain by Chouteau.

Tracing to bluff looking at the RR about in center of reentrant we have a fair section of Devonian

A-Ordovician

B-3 feet of limy sandstone in a hard ledge that juts out on the slope.

C- 20 inches of thin bedded shaly limestone becoming



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NE 1/4 SW 1/4 SE 1/4




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38
 less bedded toward to and all jammed with Remselandia.
 D is about 12' of sandstone in one solid mass.
 F about 3' of dark gray ls. of Dev. lithology
 F - Chontean shaly, light yellow gray weathering
 The limestone is relatively thick toward The east as the sandstones thin.
 Where the sand is about 7' the limestone above is about 0' thick.
 0.7 mile N of wad & RR crossing (RR crossing just E of BM582 Locality
 about 100' north of RR signal 1490 and directly west of RR tracks
 across a small swampy flat.
 About 7000 paces N of road crossing.
 6686a - Shumardella from Chontean at 6686
 On Missouri Pacific RR NE cov SE 1/4 SE 1/4 15 47N-14W, 1.95 miles
 SE of Lupus in Missouri River Bluff, Columbia
 (15') Quadrangle, Moniteau Co., Mo.

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 On Missouri Pacific RR, NE cov SE 1/4 SE 1/4 15-47N-14W, 1.95 miles SE of Lupus in Missouri River Bluff, Columbia (15') Quadrangle, Moniteau Co., Mo.

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[[circled]] 39 [[/circled]]

6687 - in a glen about 1/2 mile south of road intersection with BM near 582, Devonian consists of about 3 1/2' of limestone breccia followed by 3 1/4' of hard dark gray limestone which is followed by the Chateau. We saw no ss in place. This is 35'-40' above The tracks See Columbia .

39 6687 - in a glen about 1/2 mile south of road intersection with BM near 582. Devonian consists of about 3 1/2' of limestone breccia followed by 3 1/4' of hard dark gray limestone which is followed by the Chateau. We saw no ss in place. This is 35'-40' above The tracks See Columbia .

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40 June 2

6688-6688a Lowent shale

b middle-about 2' above a

c uppermost shale 1' above

b. Represents about 5' of rock in about midst of cut 2 miles E of New Bloomfield on bend of road. 10-15' below first Thick limestone up the road. SE 1/4 33-46N-10W, Jefferson City B, Mo.

6689 - New section of US 54 cuts off Holts Summit. Halifax road, The small jog just S of Union Hill Church is cut by US 54 and runs parallel to the old RR. Two cuts are still visible, one 0.35 miles S of junction of US 54 & Halifax Rd and the second 0.6 mile south of Halifax Rd. The latter cut is 1.3 mile S of Holts Summit.

SE 1/4 NW 1/4 SW 1/4 36-45N-11W. 1.3 miles S of Holts Summit in abandoned RR cut parallel to new US 54. = 6689 = 386

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41 [[/left margin]]

Cut on US 54, 1.3 miles south of Holtz Summit

Sections on two sides of road are different, the one on the E side is best.

[[left margin, image of layers]]

?

5' H

2 1/2' G

2 1/2' F

1' E

13' D

28" C

3' B

4-5' A

[[/left margin]]

A - Jeff City - rises to 10'+ to S.

B - lenticular mass of oolite not present on west side road.

C - Platy thin bedded dolomite 28" with green shale at base and top.

A,B,C. probably belong to the Jeff City

Devonian appears in one great massive irregular bed 13' mostly of ls breccia

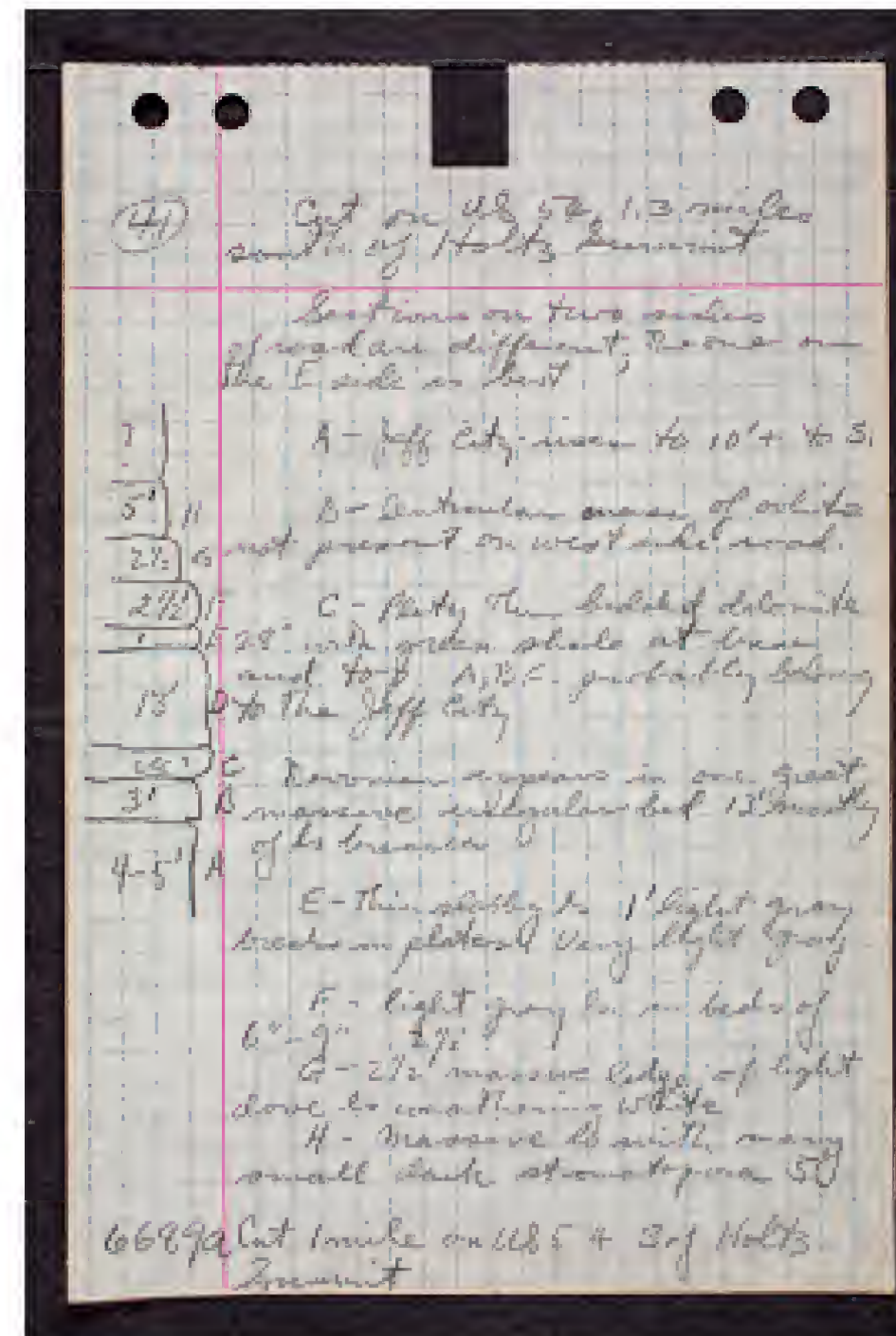
E - Thin slabby ls. 1' light gray breaks in plates. Very light gray

F - light gray ls. in beds of 6"-9" 2 1/2'

G - 2 1/2' massive ledge of light dove ls weathering white

H - massive ls with many small dark stromatopora 5'

6689a Cut 1 mile on US 54 S of Holtz Summit



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42

The beds in the cut (RR) where we collect do not appear in the Hy cut but may be on the flank of a big hump. The Hy cut slopes steeply toward the east and probably underlies the fossil beds. Shale at the N end of the RR cut is probably Jeff City

At the RR cut we have the following section

A-massive gray, hackley? fracturing ls with Stropheodonta at top.

Lithologically variable

B-10" single band like that below

C-Shaly band hard in middle but soft on top & bottom 7"-a coquina of Stropheodonta in places

D-Massive limestone with irregular fracture packed with fossils

E-Shaly ls packed with fossils a probable 2-3' more

Image in left margin shows strata from bottom to top: 4 1/2'A; 10"B; 7"C; 31"D; E. B,C,D strata bracketed with line drawn to "6689"]

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43 6690- junction of A and US 63.
 380a= Qys & road cut on US 63 - 5.1 miles on US 63 S of Oldham
 A- Jeff City

B- Dove calcilutite brown gray 6' brecciated in places.
 C- Thinner bedded brown gray calcilutite 2 1/2'

D- Light gray massive calcilutite

E- calcilutite with ball-like Favosites and stroms

F- bed with breccia of light calcilutite 7 inches

G- bed with large Stromatopora

H- calcilutite bed, massive light gray weathers white. Stromes on top

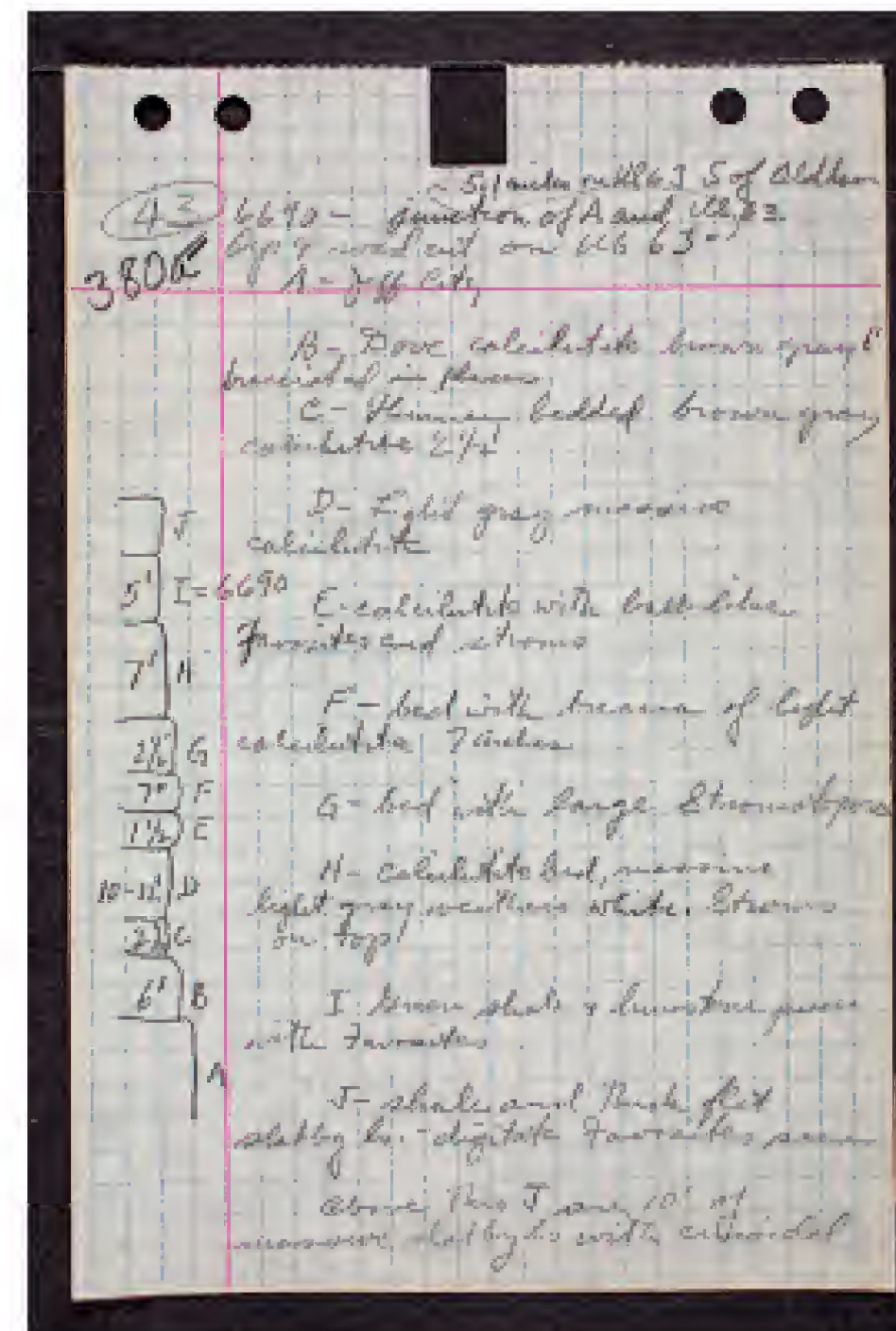
I Green shale & limestone pieces with Favosites

J- shale and thick flat slabby ls. - digitate Favosites seen

above this J are 10' of massive slabby ls. with crinoidal

[[left margin]] [[image: diagram showing layers of soil]]

J
 5' I=6690
 7' H
 2 1/2' G
 7" F
 1 1/2' E
 10-12' D
 2 1/2' C
 6' B
 A
 [[/left margin]]



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44

debris - weathers brownish - I suspect this to be Mississippian
At North end of cut dark shales fill joint cracks and sinks. Is it Saverton
shale. A large cavern on West side road is filled with sandstone
6690 = NW 1/4 24 - 45N - 12W, about 6 1/2 miles NW of Cedar City and
5.1 miles S of junction A & US 63 at Oldham, Jefferson City Mo. Just south of the junction of Claysville road and US 63. 7
Miles N of Missouri River bridge

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[[margin: drawing of sediment layers]]

[[1 1/2]] [[F]]

[[1 1/2]] [[E]]

[[2']] [[D]]

[[6']] [[C]]

[[4']] [[B]]

[[A]]

[[/ margin]]

45 - Paleont. & Stratig of the Cedar City fm
(mid Dev) of Mo.
George H. Fraunfelter June 1964

June 3
Sent off 6 bags + one box. Total
for trip = 3 boxes, 10 bags.

In bed of creek, on east side
of road, 1/4 mile NE of Easley,
SE cor NE 1/4 NW 1/4 3-47N-13W,
Columbia [[square]], Missouri

A - Covered

B - irregularly bedded shaly
ls, dark brown gray with hard
limey masses that weathers into
lumps.

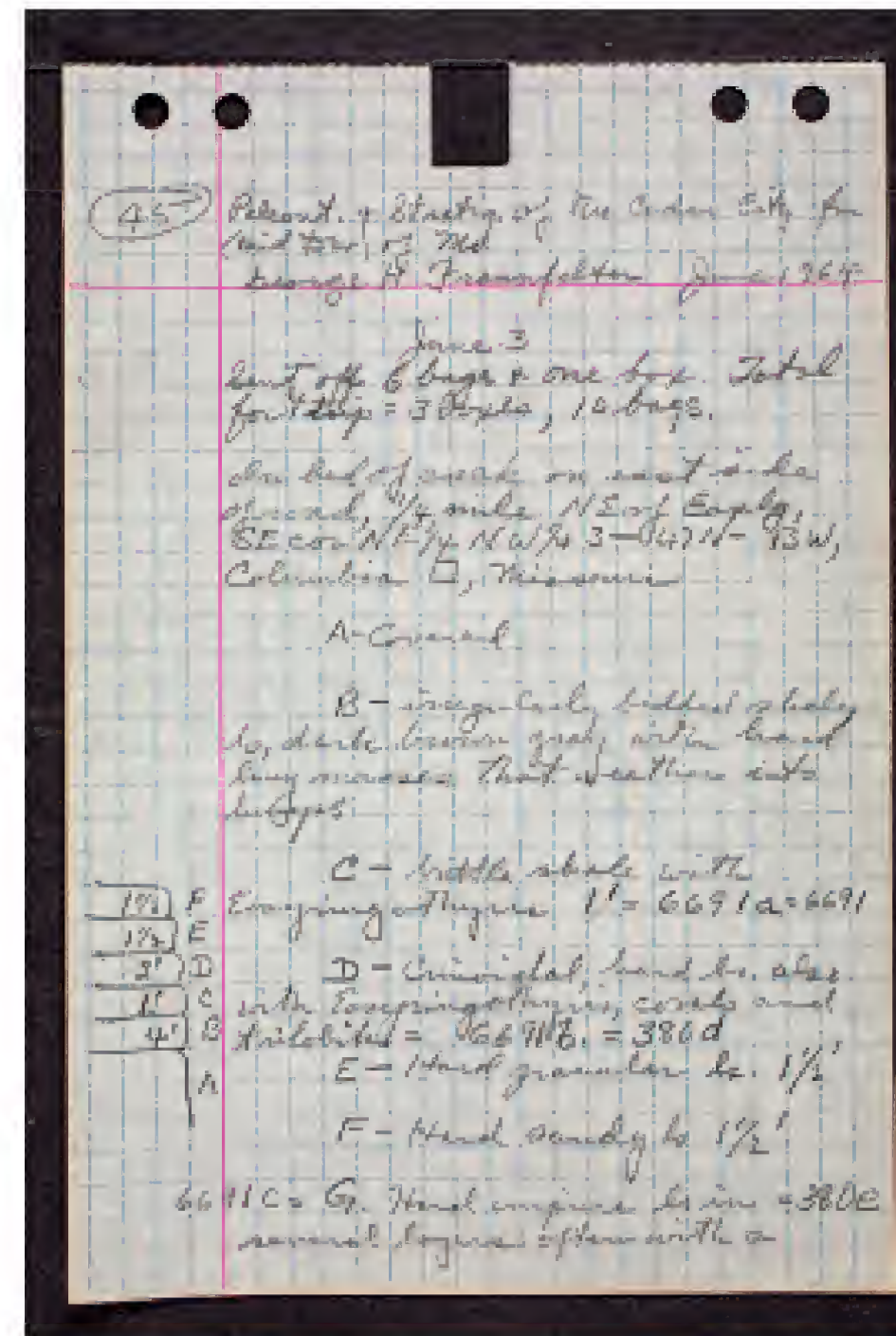
C - brittle shale with
Eosyringothysis 1' = 6691a = 6691

D - Crinoidal, hard ls. also
with Eosyringothysis, corals and
trilobites = 6691 b. = 380d

E - Hard granular ls. 1 1/2'

F - Hard sandy ls 1 1/2'

6691C = G. Hard impure ls in = 380e
several layers often with a



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46 black or brown crust - Faonurus markings. This ls appears in places to be altered to a green shale or clay or the clay may be between the layers.

120 paces upstream from G is Chouteau in the stream bed and in a side gully. = 6691D

6692 - Quarry at Easley in Chouteau center seat (3-47N-13W, 0.3 mile S of Easley, Columbia [[square]], Boone Co., MO.

June 4

Hall + Riley Quarry, West side US 65, 4 miles N of Junction with US 40 = Int. 70

[[379a]] = 6693

A - Thin-bedded papery shaley limestone with black parting S. This rock is at adits of 2 tunnels. About 5' thick. Its surface is undulatory from hard limey mosses in it. Except at tunnel. This forms floor of Qy.

B - 12' Smooth above brown calcilutite with [[hackley?]] fracture surface, breaks very irregular.

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[margin circled 47]
 C-2 feet of hrackly or mealy
 ls simply packed with
 Rensselandia - long slender ones
 in lower 3/4 but large missouriensis types in upper part = 6693 B
 C - Dove ls with nodules
 of lime + shale partings - bed
 very irregular in thickness
 Shale seam at top.
 E - Dove ls Dev. or Miss.

Found a pocket of black shale under the Rensselandia bed which I
 suspect is
 Pennsylvania. Similar black
 shale was seen filling cavities in The Burlington.
 I suspect therefore that the black shale is a cavern filling occupying any
 level in the limestone. Black shale = 6693D
 In margin from top to bottom is:
 [[Crinoids = 6693C]]
 [[Dove ls]] [[E]]
 [[10']] [[D]]
 [[6693B 2']] [[C]]
 [[12']] [[B]]
 [[6693A 5' or 6']] [[A]]

47

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6693C
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 6693B 2' C
 12' B
 6693A 5' or 6' A

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48

June 5
6694 Old Quarry on N side of
US 50, 0.15 miles west of
junction of US 50 and Mo. 135,
about 2 miles W of Otterville,
Cooper Co., Mo.

A - Coarse friable sandstone
with angular fragments of
white and dark chert

B - Tan to light dove gray
calclutite intricately seamed by worm borings and falling into little
pieces where rotted - Abundance of borings is outstanding

C - Light gray calclutite with scattered borings and pockets of breccia at
top.

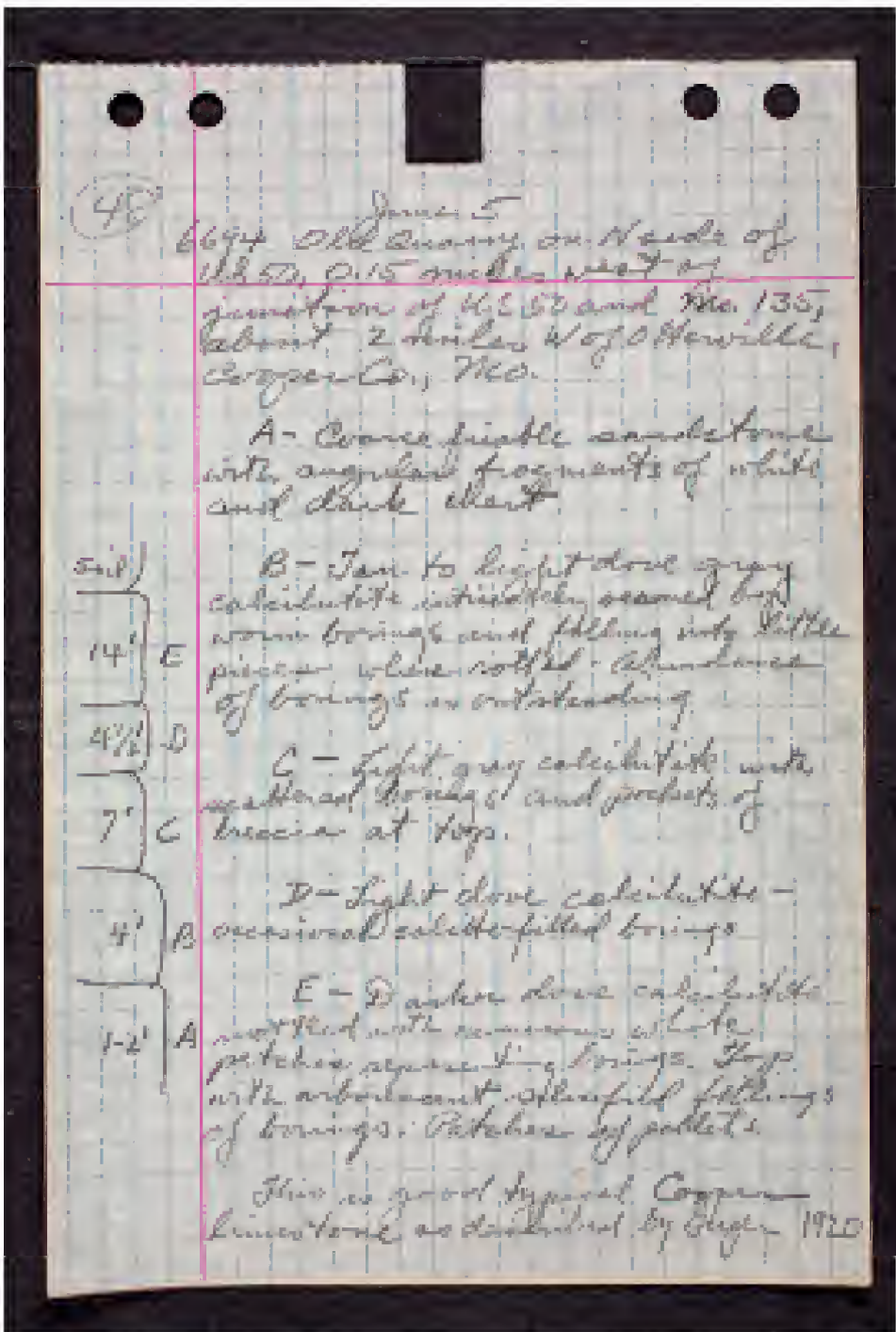
D - Light dove calclutite -
occasional calcite-filled borings

E - Darker dove calclutite
mottled with numerous white
patches representing borings. Top with arborescent silicified fillings of
borings. Patches of pellets.

This is good typical Cooper
limestone as described by Greger 1920

Diagram showing layers

soil
14' E
4 1/2' D
7' C
4' B
1-2' A



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49

June 5

Om Naide quarry 6' of Dev. overlying the Renss. bed. The top has much pyrite and is covered by an 1 1/2" of green clay or shale. The roof of the two adds on the W side of the quarry is just about the base of the Missippian. Bed above Renss thickens & thins - on N side Qy it is 6' thick, at tunnels it is 8-10' thick. The beds overlying it are thinner-bedded, cobbly or nodular with thin shale [partings?]. These are the beds that produced the few crinoids found.

Saw a loose piece of earthy ls with small favosites of alpenensis type. Top of Dev with breccia in places; chocolate brown.

Bed above Renss is granular in places, but it is mostly dove ranging from light to chocolate

6693 - Hall & Riley Qy is 3.75 miles N on US 65 from junction with US 40 = Interstate 70.

Several pictures

Picture of sink on new road

cgl. ss. & dark shale. Cut about 6 miles N of Sedalia, Mo.

6694 curve in old US 65 4 miles N of junction old US 65 and Co. HH+H, about 6 3/4 miles N

[[left margin]]

Hall and Riley Qy revisited [[line indicates this should be inserted after date on page]]

[[end left margin]]

49
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50 of Sedalia

June 10

6694 Collection made between 5 + 10' above a green clay marking top of Devonian. Saw Ordovician on N side of town at junction Mo 750 + US65

379b 6695 - Section on and beside small stream 2.7 miles on Co. B south of Clifton City, Mo. This stream leads to my old locality on S bend on old road.

About 10' Cooper Lithology is overlain by 6-7' of cross-bedded lime sand. The outcrop underlies Chouteau and is 57 paces downstream from Co. B. My old locality is 150 paces downstream.

Old Road appears first 1.5 miles S of RR in Clifton City and then again 2.9 miles S of RR in CC on Cooper Co highway BB. At 2.7 miles my locality can be reached by going 150 paces downstream in gully. From second intersection of BB & old road my locality is about 60 yards N on road. Good exposures of Chouteau appear on old road.

[[left margin, written sideways]]

72.35 - Junction BB + Mo 135

72.2 - RR on S side of Clift. City = 0.15 Look up Clifton City [[square symbol]]

70.95 - Old road = 1.25

69.6 - Stream + BB crossing = 2.6 miles

69.5 - Old road = 2.7 miles

my locality is about 2.5 or 2.6 miles S of CC

[[/left margin]]

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[[circled]] 57 [[/circled]]

At my locality I make about 8' of strongly cross-bedded lime sand crowded with brachiopods but specimens mostly poor. My locality should be nearer the old road and stream crossing than I have it. Small *Atrypa* reminds me of the Snyder Creek one. I make about 10' of *Mineola* type rock under the calcarenite

Found *Anathyris* at almost the top of the calcarenite.
Lorangerella occurs within 2 or 3' of the top.

[[left margin, written sideways]]

Longerella found near top along bench on east side stream

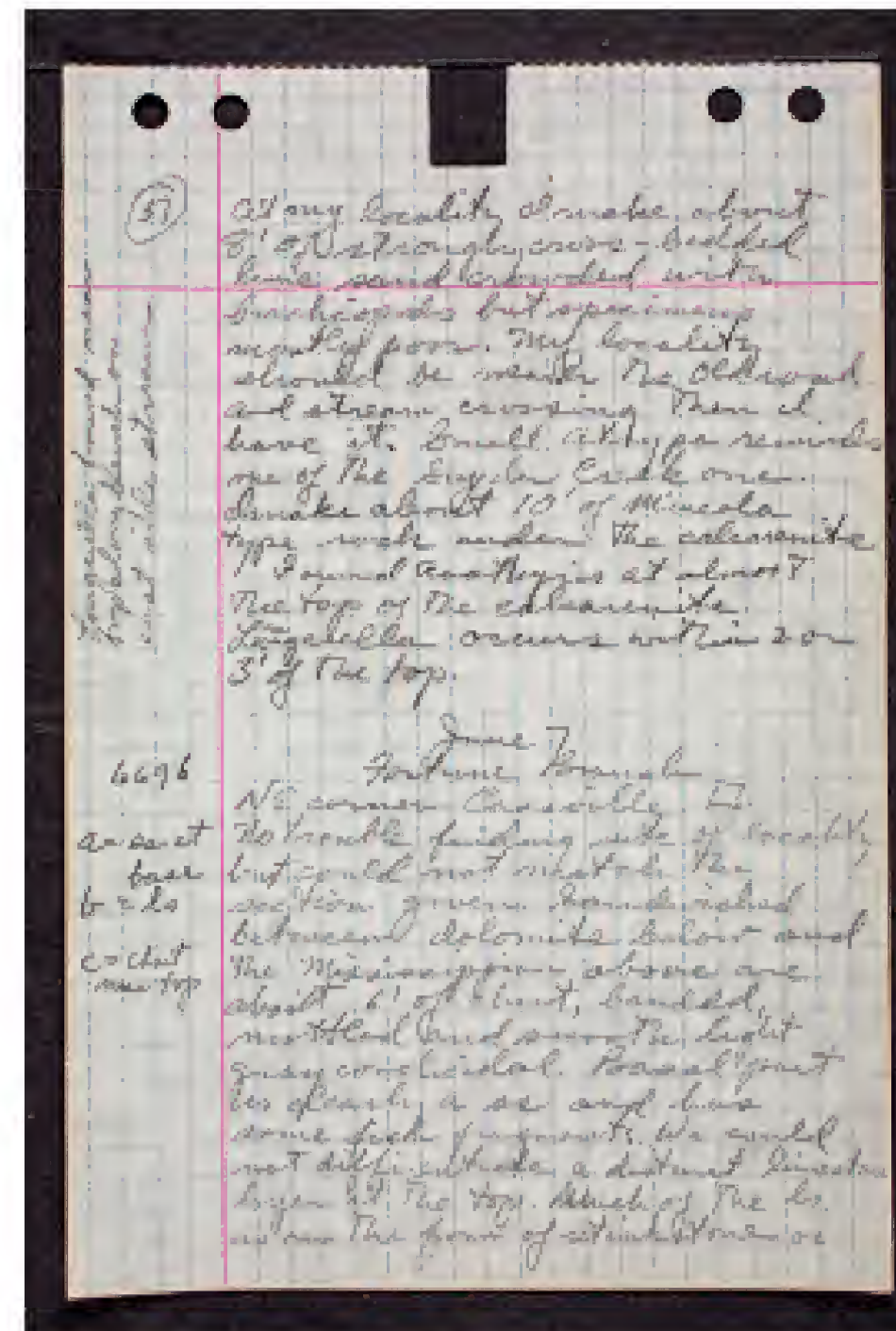
[[/left margin]]

June 7
Fortune Branch
[[left margin]]
6696

a = ss at
base
b = ls

c = chert
near top
[[/margin]]

NE corner Cassville [[square symbol]]. No trouble finding site of locality but could not match the section given. Sandwiched between dolomite below and the Mississippian above are about 6' of chert, banded, mottled and smooth light gray conchoidal. Basal part is clearly a ss and has some fish fragments. We could not differentiate a distinct limestone layer at the top. Much of the ls. is in the form of stinkstone or



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[[circled]]52[[/circled]]

black calcite

June 8

6698 - at crossing of Ill. 127 and Carry Creek is out crop of Clear Creek on W side Ill 127 under the Dutch Creek. This is at 1.1 miles N of Junction Ill. 146 & 127. Also on east side of bridge over Carry Creek, in south bank of creek appears a good outcrop of Clear Creek with much gray ls.

Exactly 4.1 miles N of Ill 146-127 [[margin note]]6698a[[/margin note]] on 127 is an outcrop of Onondaga 12' of gray crystalline limestone light gray when fresh, often white & marble-like when weathered. Weathered surfaces with much crinoidal debris. SE 1/4 SW 1/4 27-115-2 W. Alto Pass [[diagram of a square]] Ill. At Clear Creek, which is only 1/4 mile from previous outcrop - old bridge and new bridge cross at same place. Outcrop of St Laurent in bank on east side of bridge.

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[[margin note]]

6699 - about SW 1/4 SE 1/4 5-36N-9E, 3/4 mi N of Boarman School.

[[/margin note]]

June 9

6699 - N of Boarman school

New road now goes over Beauvais

ss about 3/4 mi. N of old school. This outcrop is 2 1/4 miles on State road J west of junction with State road N which is about 0.3 miles S of Ozora.

66100 - Miss. bryozoans - On US 61-67, 1.3 miles N of Imperial, Mo.

66101 - Barnhart fm., on US 61-67 2 miles south of Barnhart, Mo.

Roads S of Ozora have been greatly changed. That leading N of the Boarman school is now defunct but a large area of Beauvais is exposed south of State Rd J and in the woods on the north side. The Grand Tower is exposed at the east end of the exposures. The State Rd J crosses the old Boarman school road at approximately the old outcrop of the Beauvais.

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Altenburg

June 10 = Union School

66102 - Weathered chert (breccia) near junction of 2 streams, about 50 yards upstream. Above the junction & 20' above stream is a thick massive brownish gray limestone from which we were unable to take fossils. This ledge is 15' thick. Pacing started at junction of streams. This side stream has only chert float some of which is deeply weathered and evidently in place. This weathered stuff also appears under the ledge above. The 15' ledge is much fractured.

10 paces from Sj (stream junction) about 5' hard brown-gray ls with Paracyclas and Mediospirifers

63 paces - about 2' of ls in stream bed. N40W28NE a little chert. About 2' thick

135 Stream & road in contact

158 - a foot or two of granular ls with large Paracyclas & fish spine

230 - begins long outcrop in banks - N52W26NE
Stream here N10W and distance

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between top & bottom of outcrop is 110'

Top of outcrop at 274 rock dark brown gray, irregular fracture. Fossils hard to get

Small to medium chonetes and a mediospirifer. Small masses of light chert. At bottom at 240 paces lucasensis = 66102F

310 paces another outcrop like that at 230-274. This outcrop is 50 long-stream N25W.

Strike N65°W32°NE. All told about 30' of rock at a guess

The lowest part of the lower half of this cut abounds in small Chonetes, Leptaena and an occasional Spirifer (fornacula?) = 66102A.

The top of the lower half contains the same chonetes and Leptaena but we also collected Microcyclus = 66102B

The upper half at the top has Schizophoria, a small Spirifer, Phacops & Stropheodonta = 66102C

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56

66102G - large Atrypa from Upper granular beds.

thickness, Hard brownish gray. Real small chonetes, Spirifer. Like top of preceding. Rensselandia=66102E

445 Road & stream cross.

About 1/4 mile West of School stream & road cross, stream on west side road. At this point which marks a sharp bend in the stream. Limestone granular, cherty with many corals including Hexagonaria

Along the just west of stream crossing big blocks continuing much Aulopora and large Atrypa appear beside the road.

70 paces downstream the limestone is crinoidal, granular and replete with cup corals and has many chert nodules. The stream here is about parallel to the strike, about N 50°W. The dip here is almost vertical and about 8' thickness is shown.

=66102 D. These beds are 375 feet west of Union School in the stream bed.

The road past the school has been rerouted somewhat.

Blocks on road, that contain large Atrypa are granular crinoidal

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57 have Hexagonaria, ramoseals & aulopora. The latter in abundance. These certainly belong to the upper granular beds at the school. Photo of union school F8 at 1/125 & 1/250 Rensselandia bed is exactly 1/4 mile SW of Union school in stream on west side of road. Glen beside Rd S of Ridge School. 66103 220 Paces from old road crossing gully covered. First rock about 10 paces of rotted ls. At 221 is a 2' coral bed. above this is about 5' shaly ls followed by 5-10' of cherty ls. N78°W. 23°N. Outcrop occupies about 40 paces.

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June 11

66104 - Hillside facing SE, 1/2 mile SE of Wittenberg - very top of hill with blocks of cherty granular to fine grained limestone, often with shaly fracture. Some shale in float. Blocks at top of hill approximately in place. *Tropidoleptus* common, *Microspirifer* and princeps type of *Aviculopecten* common. This is clearly the St. Laurent.

66105 - section (composite in gullies along ridge SW of Wittenberg

First rock seen dips strongly to the west, is a leached limestone and is either a [??] or a sharp fold. Under this is band shaly ls that flattens out and then dips east. I think the east dipping beds are the same as those dipping west and we have a small anticline. The shale makes a covered interval which represents about 20' of rock. The shale is overlain by an irregular bed of limestone, in places containing thick beds of chert which have a small *chonetes* & *Microspirifer*. The limestone abounds in corals and in stomatops. *Billing sastraea*
66105 is in slope 200' from sharp bend in private road.

58 June 11
66104 - Hillside facing E.E. 1/2 mile SE of Wittenberg. Very top of hill with blocks of cherty granular to fine grained limestone, often with shaly fracture. Some shale in float. Blocks at top of hill approximately in place. *Tropidoleptus* common, *Microspirifer* and princeps type of *Aviculopecten* common. This is clearly the St. Laurent.
66105 - Section (composite in gullies along ridge SW of Wittenberg.
First rock seen dips strongly to the west, is a leached limestone and is either a sharp fold or a steep fold. Under this is band shaly ls that flattens out and then dips east. I think the east dipping beds are the same as those dipping west and we have a small anticline. The shale makes a covered interval which represents about 20' of rock. The shale is overlain by an irregular bed of limestone, in places containing thick beds of chert which have a small *chonetes* & *Microspirifer*. The limestone abounds in corals and in stomatops. *Billing sastraea*

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seen in one large slab. The Coral bed and associated beds may be about 5' thick. Above the coral bed about 10' appears a foot of shaly limestone. [float] to the top of hill has limestone with [?] and a [punky]reddish sandstone. The limestone (coral) forms a bench about 30' below the top of the hill at about 470' El.

[[left margin]] [[image: drawing of soil profile]]

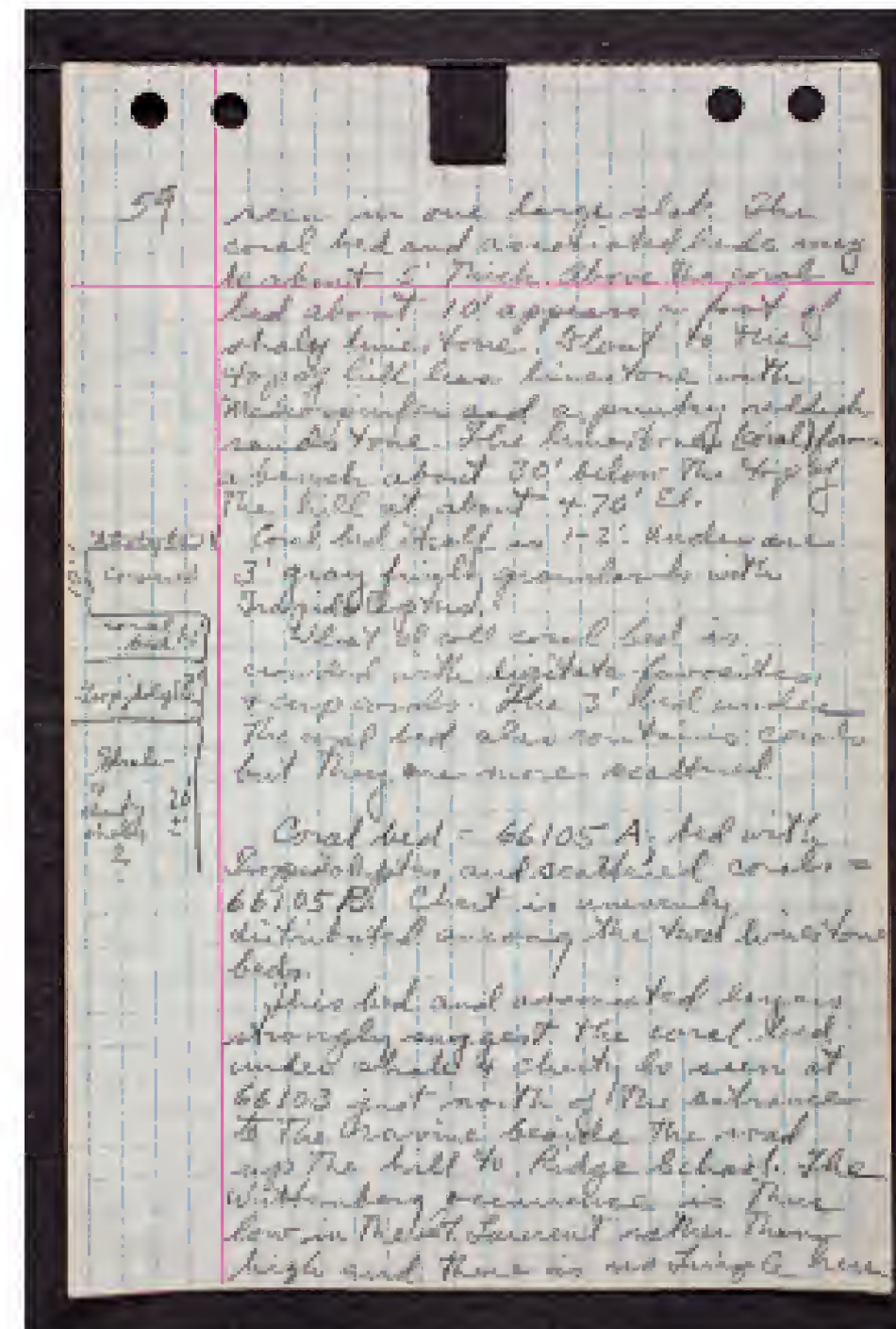
Shaly ls 1'
10' covered
coral bed 1-2'
Tropidoleptus 3'
Shale & cherty shaly ls 20'±
[[/left margin]]

Coral bed itself is 1-2': Under are 3' gray finely granular ls with Tropidoleptus.

What I call coral bed is crowded with digitate favosites, & cup corals. The 3' bed under the coral bed also contains corals but they are more scattered.

Coral bed = 66105A; bed with Tropidoleptus and scattered corals = 66105B. Chert is unevenly distributed among the two limestone beds.

This bed and associated layers strongly suggest the coral bed under shale & cherty ls seen at 66103 just north of the entrance to the ravine beside the road up the hill to Ridge School. The Wittenberg occurrence is thus low in the St. Laurent rather than high and there is no Lingle here



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Location of A20 from St. Hy C SW to Ridge school
81.75 - 82.85 = 1.1 miles, 226°
from this point on new road will take one to A20. Rock exposed in
stream for 200 paces down from road & stream crossing all in *Spirifer*
lucasensis or associated beds.
to lower curve 83.2 = 1.45 miles

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60

[[image: pencil diagram of cross section of soil]]

[[image labels]]

Covered miss chert & ls float

92° vertical

Stratigraphic

7' D

20' C

8' B

3' A

[[/image labels]]

66106 Sally 0.4 mile E of Ridge School

A - 3 feet of limy shale & shaly ls.

B. about 8' of hard massive ls with many corals numerous, many small branching type. Billings astraea. Undoubtedly same coral bed as 66105 and 66103

C - covered - guesstimate of 16-20' One patch of shaly ls. seen.

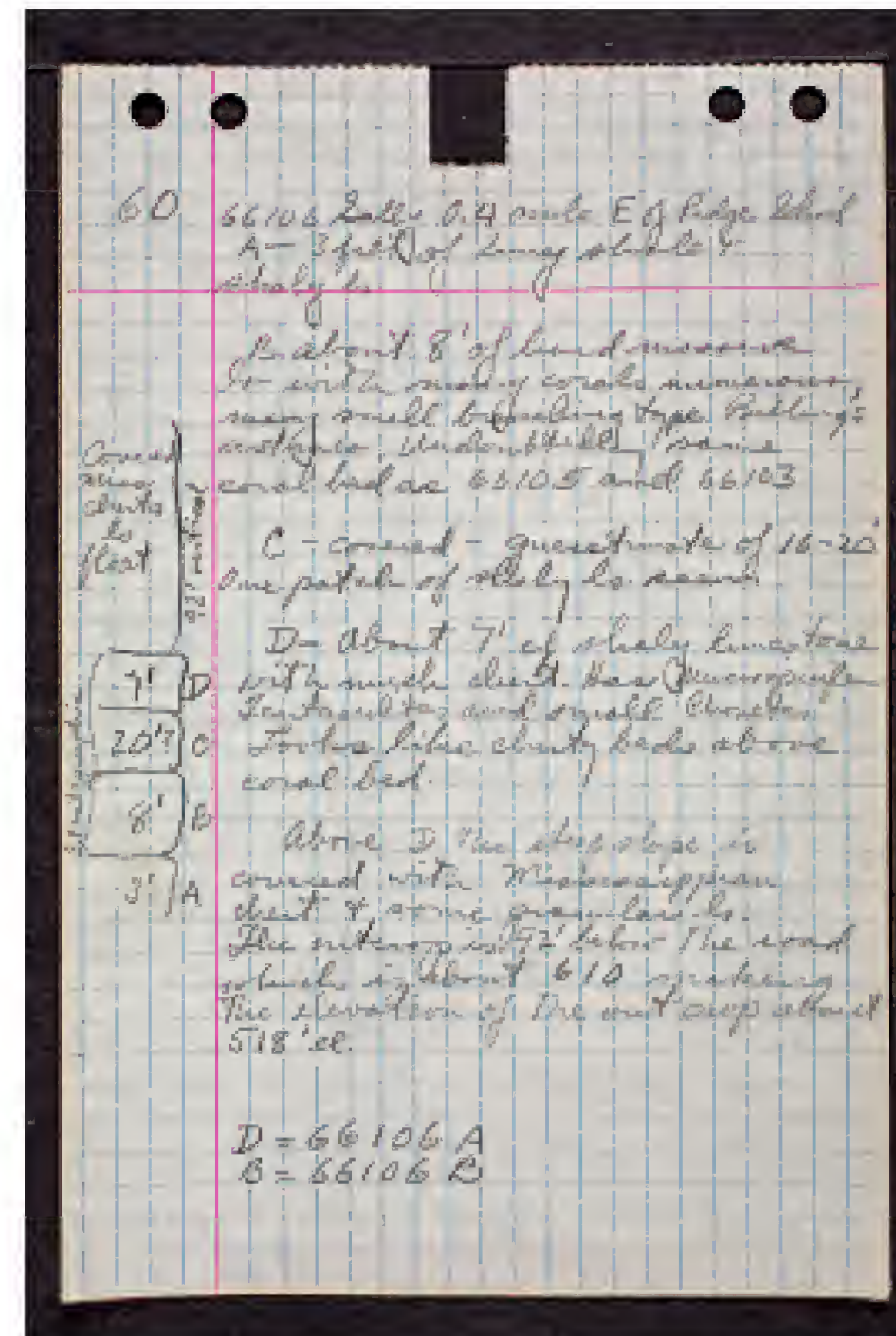
D - About 7' of shaly limestone with much chert. Has (Mucrospirifer Tentaculites and small Chonetes Looks like cherty beds above coral bed.

Above D the steep slope is covered with Mississippian chert & some granular ls.

The outcrop is 92' below the road which is about 610 making the elevation of the outcrop about 518' el.

D = 66106 A

B = 66106 B



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61

June 12

66107 - Beauvais as on S side Little Saline Creek east of Boarman School.

66108 - About 10-12' of bluish hard ls abounding in Schizophoria & small corals. belongs in upper part of Grand Tower. Good exposures along road 2.6 miles W of junction State / N&J at bend of road

66109 St. Laurent Creek

A

66109C

B

SS at base strikes N75°W is nearly vertical & extends 18 paces = 45'

thick 21 paces covered 50'
21 paces to next outcrop which is 30 paces long = 75' thick. At 30' up is a bed of cherty sugary ss 3' thick followed by a foot of ls with much chert. Beds at top cherty ls.

50

62

25 paces covered = 62'

C

66109A

Outcrop is 20' thick - 6' below top and from there to 12' below top rock is packed with Sp mucronatus & Chonetes coronatus Lower beds with large Chonetes

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62

23' covered

D - 12' of hard limestone contains a few scattered corals & *Mucrospirifer*
Saw no black shale, in creek bed 32 paces covered = 80'

E - 65' of thin-bedded limestone becoming hard & massive at top. Contains much chert in lower part of beds up to 1 1/2' thick - Saw no fossils. Miss.?

F = 15' of massive crinoid ls. = Mississippian

66109B

D - is the last of the Hamilton beds

66109C Small *Athyris* in top of ss.

62 23' covered

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& *Mucrospirifer*
Saw no black shale, in creek bed
32 paces covered = 80'

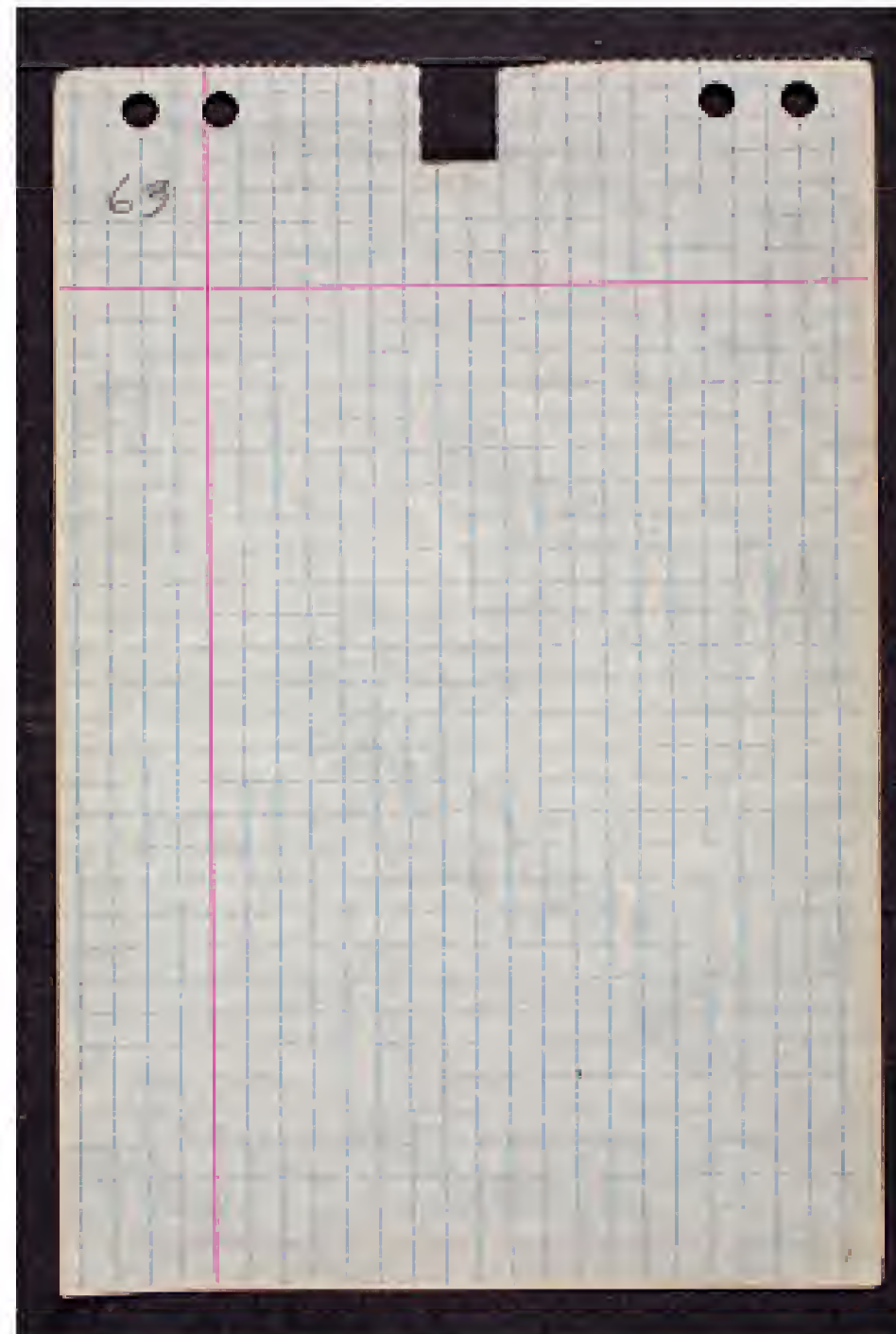
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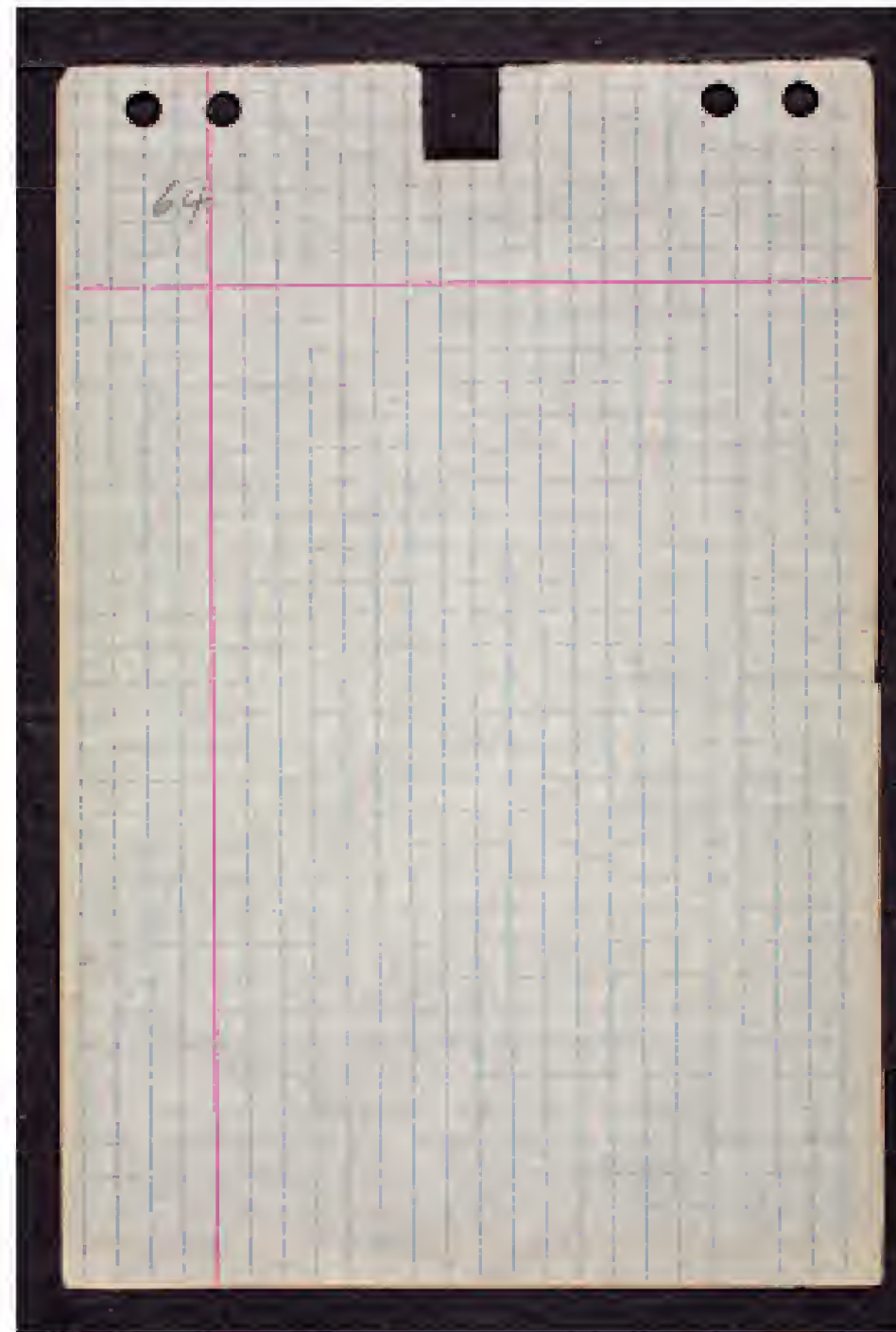
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